REPAIR MANUAL
&
PARTS LIST

FOR

FUJI PROFESSIONAL CAMERA

FUJICA GS645

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I DISASSEMBLY AND REASSEMBLY

1. Top cover assembly (1 - 1)

- Remove the film advance lever assembly (1 - 33) after removing the set screw (1 - 30).
- Raise the top cover assembly (1 - 1) to remove it after removing three set screws (1 - 27, 1 - 28 and 1 - 29).

  NOTE: Pay attention on the two lead wires extended to the shoe (1 - 4).

[REASSEMBLY]

- Be sure to set the film selector knob (1 - 9) to the 120 film side before installing the top cover. If the top is installed with the film selector knob set to 220 film side, the selector lever in the film advance mechanism assembly (3 - 1) will be bent.
- Arrange the associated lead wires properly so that they are not seen through the viewfinder window, and install the top cover.
- Carefully combine the top cover with the terminal cover (7 - 40) and cover frame (7 - 50).
- Carefully install the lock plate (1 - 37) so that it will not be overlapped on the lever (3 - 29).
- Check the shutter release for the operating stroke. The desirable operating stroke of the shutter release is shown below.

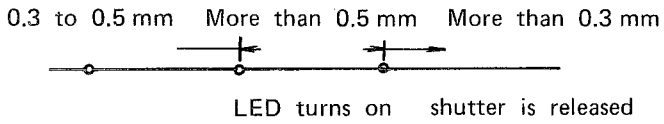


Fig. 1

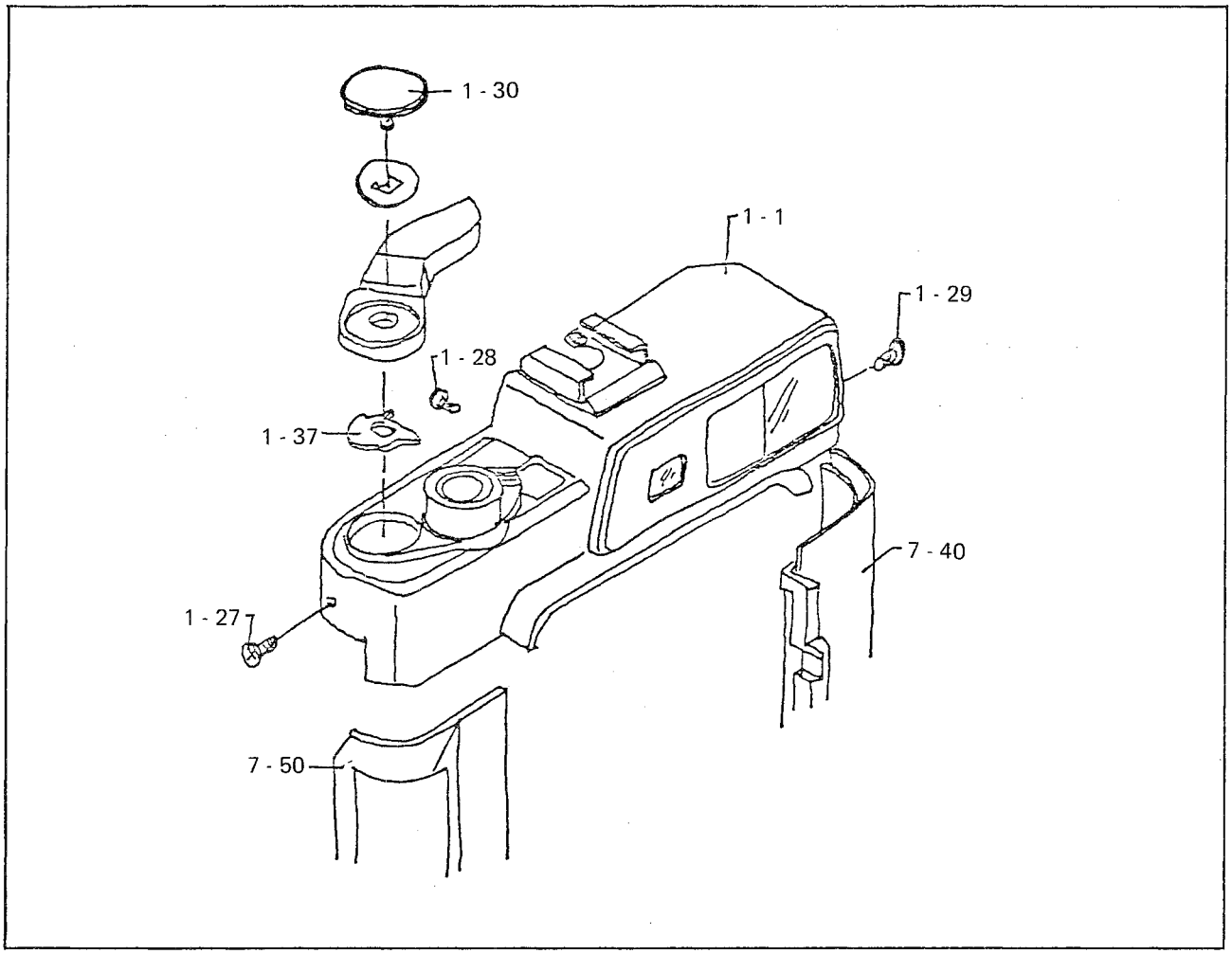


Fig. 2

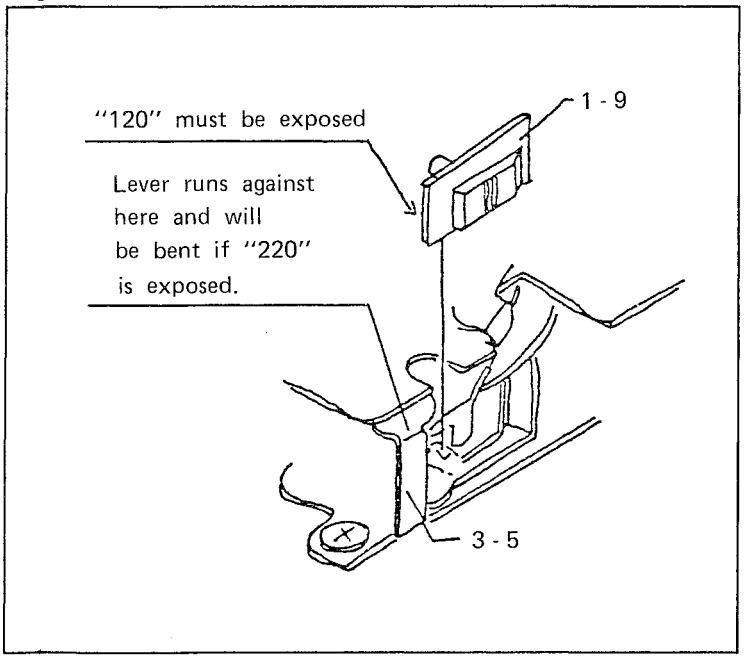
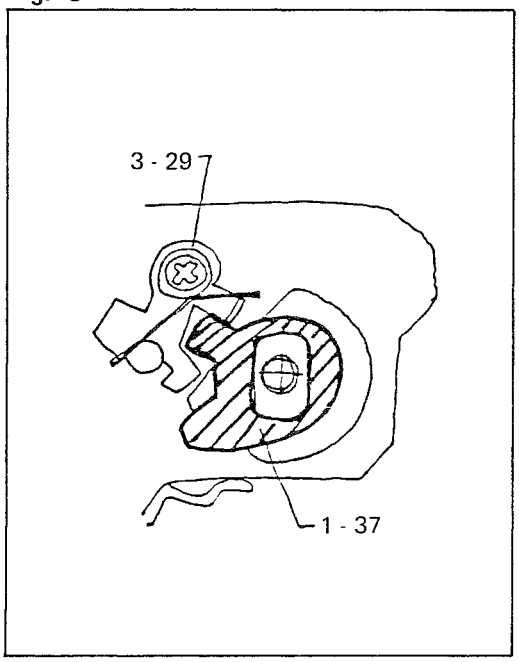


Fig. 3



2. Range finder assembly (2 - 12)

- ○ Disconnect the associated lead wires so that the flexible PCB assembly (2 - 1) can be removed together with the cover (2 - 13).
- ○ Remove the range finder assembly (2 - 12) upward after removing three set screws (2 - 8×2 and 2 - 9).

[REASSEMBLY]

- ○ Combine the pin (6 - 37) of the linkage assembly with the interlock plate (2 - 60).
- ○ Secure the flexible PCB assembly (2 - 1) on the cover (2 - 13) with a piece of double - sided adhesive tape.
- ○ Combine the photocell (built in the flexible PCB assembly) with the photocell frame (2 - 35), and install the flexible PCB assembly with two screws (2 - 2).

Fig. 4

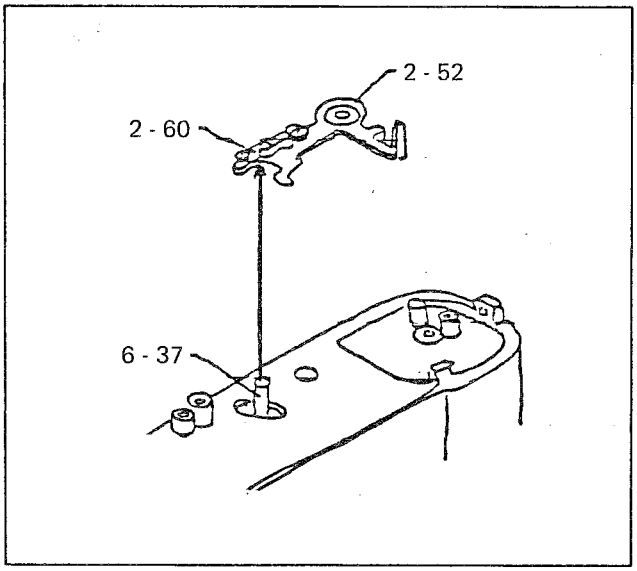
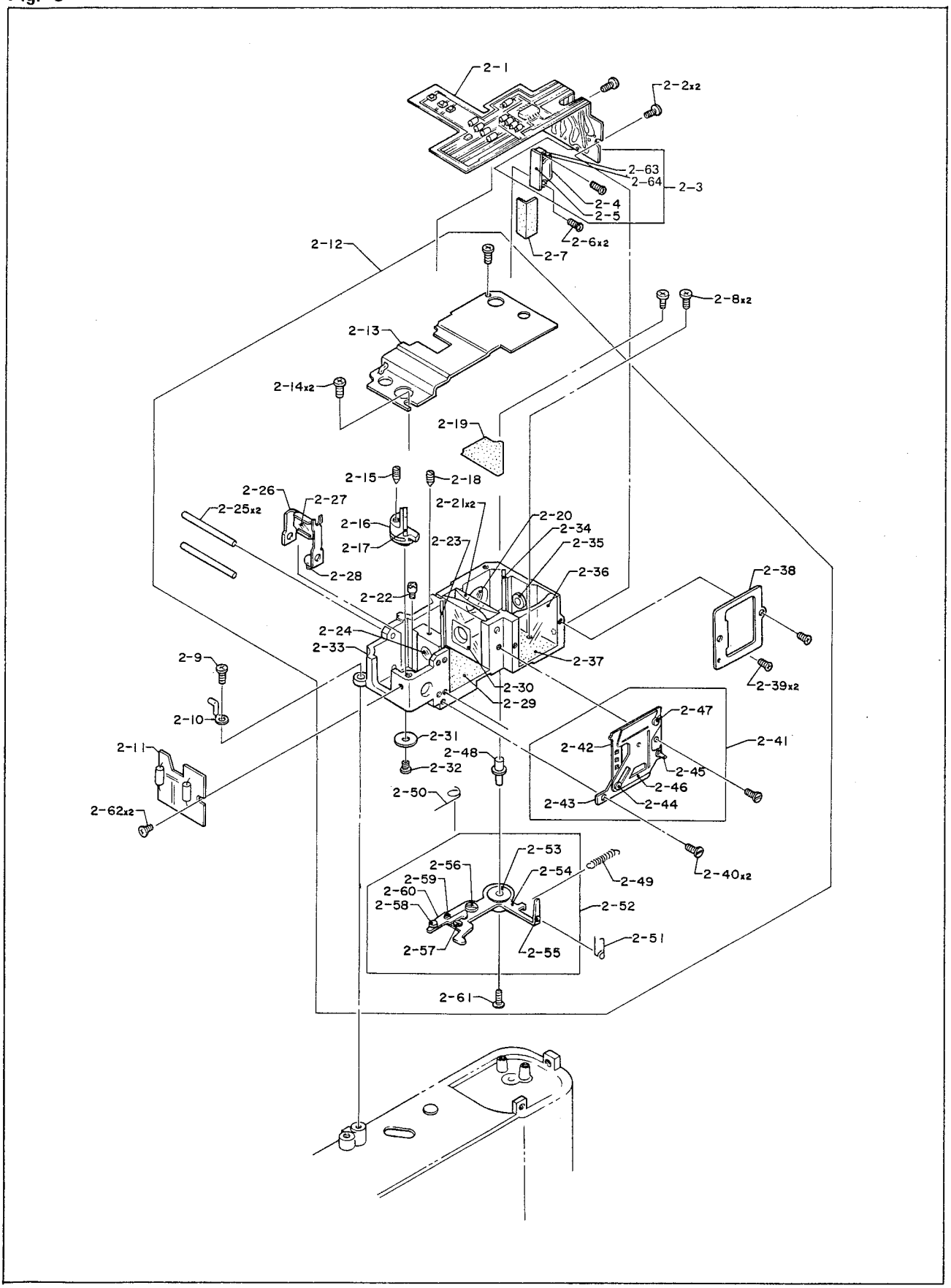


Fig. 5


2-1
2-2x2
2-63
2-64
2-3
2-4
2-5
2-6x2
2-7
2-12
2-8x2
2-13
2-14x2
2-19
2-15
2-18
2-26
2-27
2-25x2
2-21x2
2-20
2-34
2-35
2-16
2-17
2-23
2-36
2-28
2-22
2-38
2-24
2-33
2-37
2-39x2
2-9
2-30
2-29
2-10
2-47
2-31
2-41
2-42
2-48
2-45
2-32
2-46
2-50
2-43
2-44
2-11
2-62x2
2-40x2
2-53
2-56
2-54
2-49
2-59
2-60
2-58
2-52
2-57
2-55
2-51
2-61

3. Film advance mechanism assembly (3 - 1)

○ The following instructions for removal of the film advance mechanism assembly are for your reference only. A new method may be developed and used. In this case, however, it must be kept in your mind that the wire assembly (5 - 37) which operates when charging the shutter is associated with the film advance mechanism. Be careful not to damage or fold the wire.

a. Remove the bellows from the housing side after removing four set screws (6 - 46).

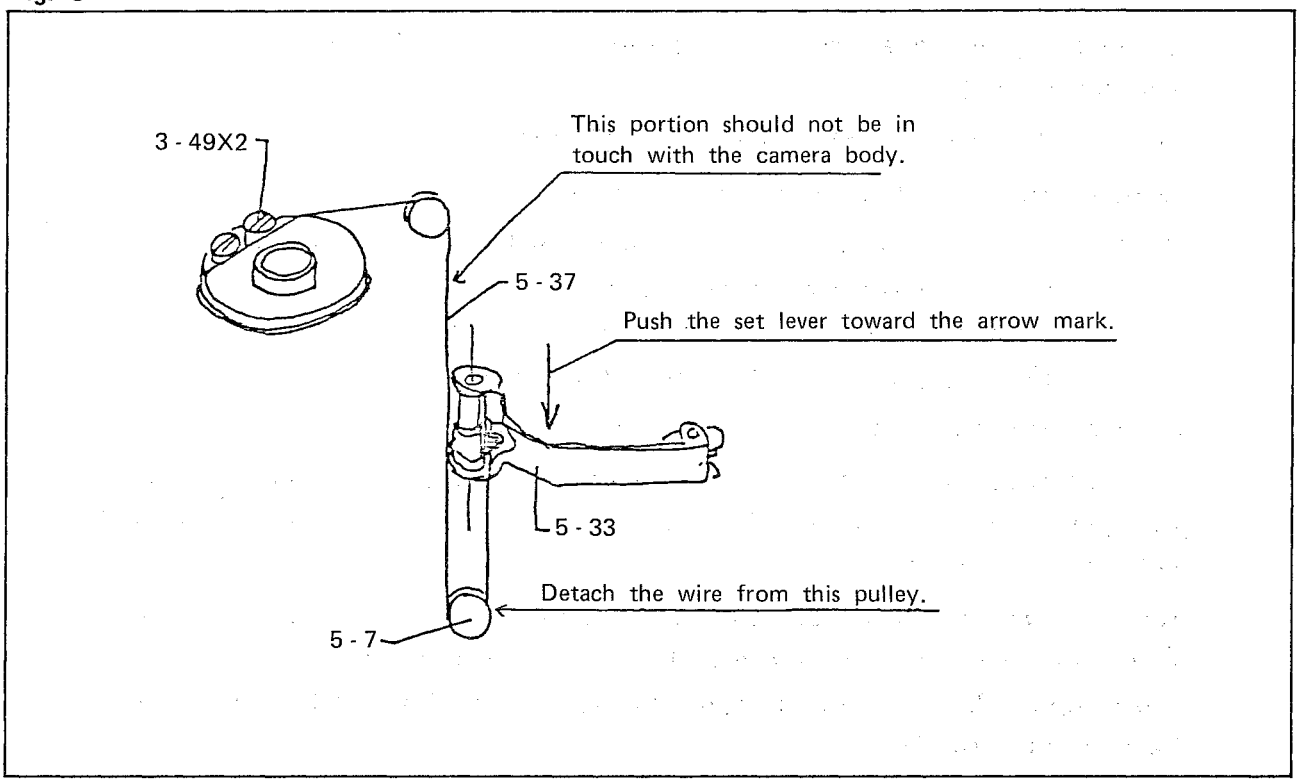
b. Remove the wire from the pulley base assembly (5 - 7) by moving the set lever (5 - 33) so that the wire is loosened.

c. Remove set screws (3 - 125×3) and screw (3 - 126).

d. With the film chamber door and zero reset lever opened, remove the film advance mechanism assembly (3 - 1) upward.

e. When separating the wire from the film advnace mechanism assembly (3 - 1), loosen two eccentric pins (3 - 49) on the large pulley.
When the wire is removed once, do not use it again but replace the wire assembly (5 - 37) with a new one.
For wire assembly setting, refer to II - 4 below.

Fig. 6

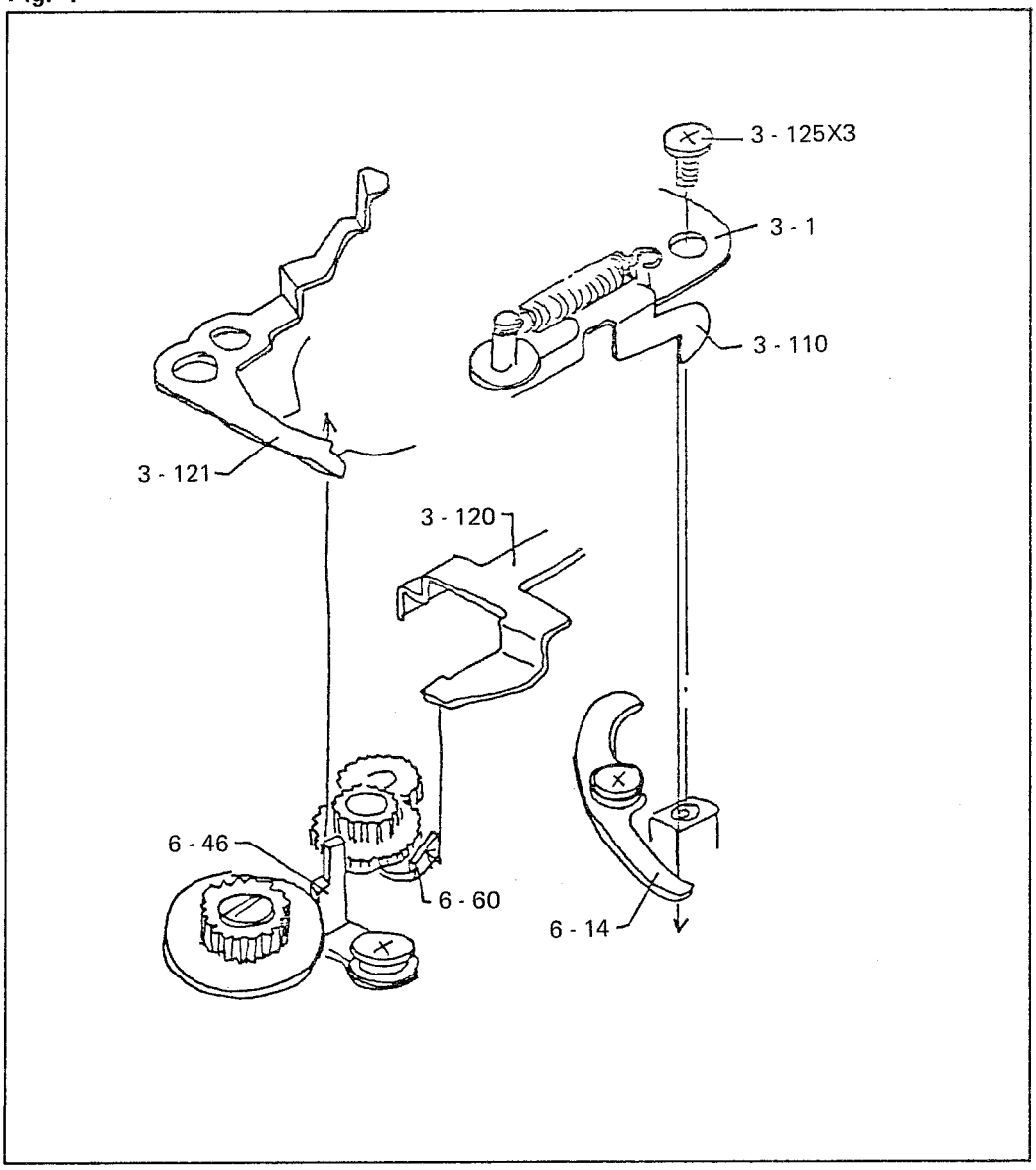

3 - 49X2
This portion should not be in touch with the camera body.
5 - 37
Push the set lever toward the arrow mark.
5 - 33
Detach the wire from this pulley.
5 - 7

[Installing Film Advance Mechanism Assembly (3 - 1)]

- Combine the zero reset lever (3 - 120) with the lever (6 - 60) of the idle gear assembly (6 - 59).
- Combine the lever (6 - 64) with the lever (3 - 121).
- Combine the lever (3 - 110) with the lever (6 - 14).

  NOTE: After insuring that the above three combinations are complete, install the film advance mechanism assembly.
  When the counter dial is advanced over 1 with the zero reset lever (3 - 120) pressed, the lever (3 - 121) will drop.
- Tighten three set screws (3 - 125) and screw (3 - 126).
- When applying the spring (3 - 62) to the screw (3 - 126), be careful not to deform the spring. If the spring is deformed, noise will occur or the film advance will not return smoothly.
- When the wire is connected, make sure that the wire is applied to the roller in the film advance mechanism assembly (3 - 1) side completely first.
  Then, loosen the set lever, and apply the wire to the lower pulley of the pulley base assembly (5 - 7).

Fig. 7



4. Housing assembly (4 - 10)

- Remove four set screws (6 - 46) from the rail surface.
- Wind up the film advance lever, and fold the linkage mechanism in a half way.
- Remove two screws (5 - 17) with a pin - face spanner.

  NOTE: When reinstalling these screws, be sure to lock them with screw locking agent.
- Remove two set screws (5 - 18) with a flat head screw driver.

  NOTE: When reinstalling these screws, be sure to lock them with screw locking agent.
- Remove the gate (5 - 76) and two links (5 - 67), and take out the housing assembly (4 - 10) carefully.

  NOTE: Pay attenion on the lead wires extended from the shutter assembly.
- When replacing the shutter assembly with a new one.
  Remove the housing assembly (4 - 10) as described above, take out the lead wires from the camera body, remove the rear lens assembly (4 - 57) and hold ring (4 - 56) with a pin face spanner, and then, take out the shutter assembly.

[REASSEMBLY]

Be careful not to hold the lead wire in between the bellows and housing when installing the bellows.

If the lead wire is held, the helicoid will not operate smoothly.

When the helicoid is operated to the position for the minimum distance, the lead wires must have an extra length.

Fig. 8

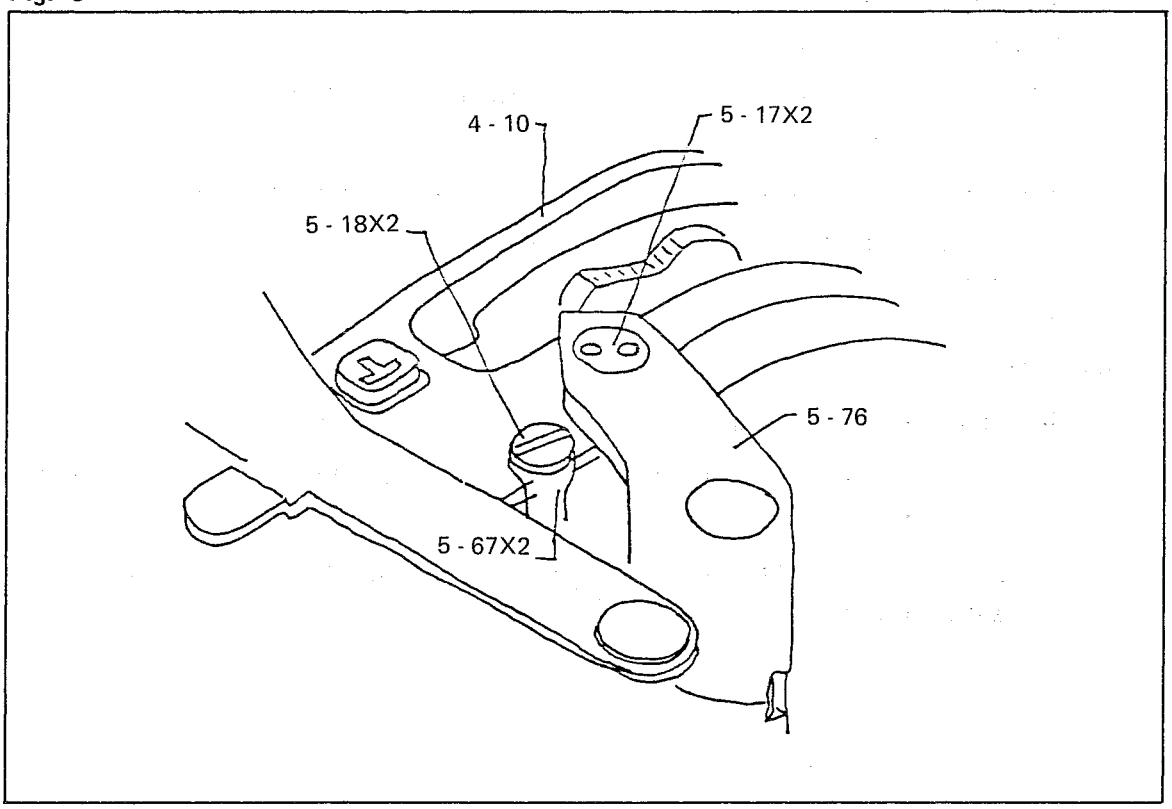
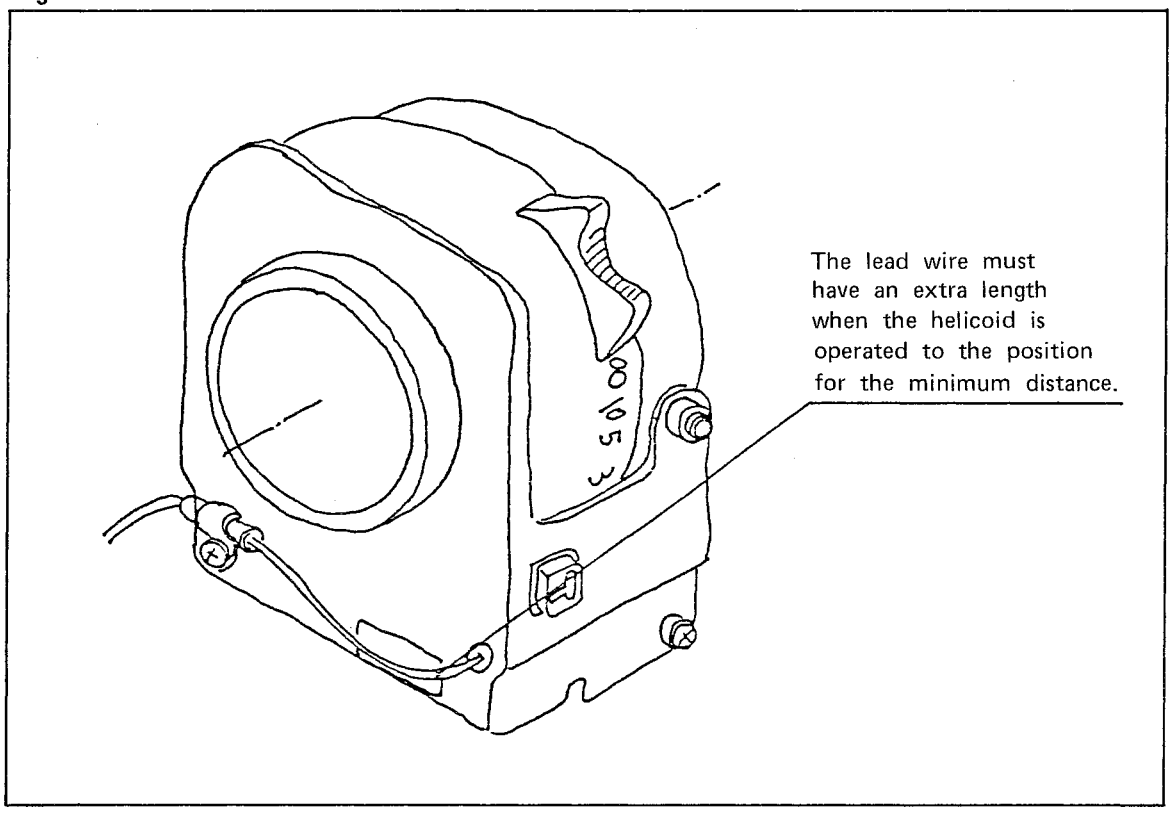

4 - 10
5 - 17X2
5 - 18X2
5 - 76
5 - 67X2

Fig. 9


The lead wire must have an extra length when the helicoid is operated to the position for the minimum distance.

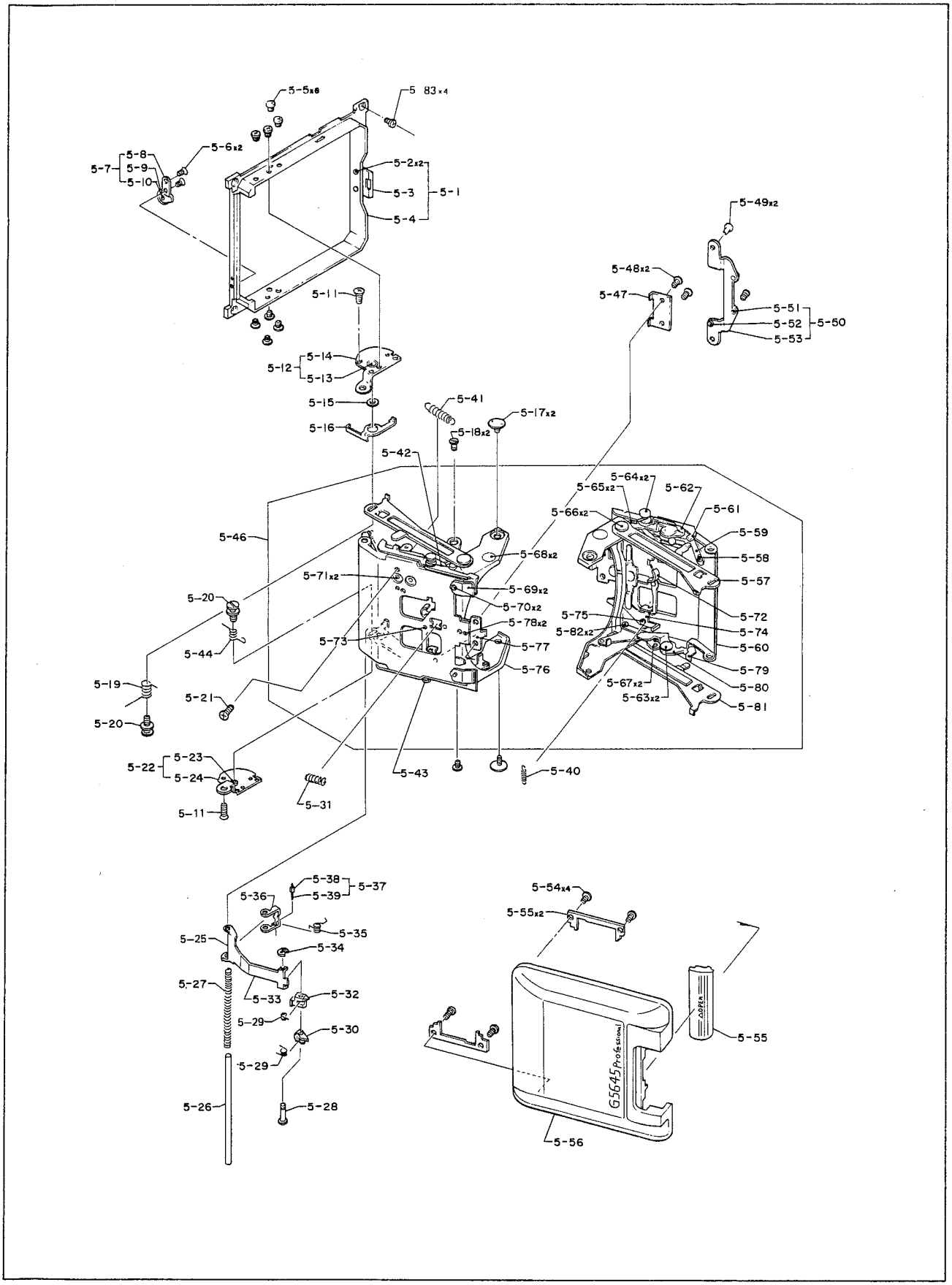
5. Front cover mechanism assembly (5 - 46)

- Do not loosen eight set screws (5 - 5) unless otherwise necessary. These screws are used to adjust the parallelism between the film plane and shutter installing surface.
- When these set screws are loosened, adjust the parallelism in accordance with the instructions in II - 3 below.
- Do not remove four washers (6 - 22) expect when adjusting focusing performance.
- When removing the front cover mechanism assembly, remove four set screws (5 - 83).

[REASSEMBLY]

- Pay attention on the installing directions of the two holders (5 - 45).
- Combine the front cover mechanism assembly with the camera body with the lever (6 - 11) released.
- Open and fold the front cover and make sure that the lever (6 - 11) hooks and unhooks with the leaf spring (5 - 16).

Fig. 10


5-5x6
5 83x4
5-8
5-7
5-9
5-10
5-6x2
5-2x2
5-3
5-1
5-4
5-49x2
5-48x2
5-47
5-51
5-52
5-50
5-53
5-11
5-12
5-14
5-13
5-15
5-16
5-41
5-17x2
5-18x2
5-42
5-64x2
5-65x2
5-62
5-66x2
5-61
5-46
5-59
5-68x2
5-58
5-71x2
5-57
5-69x2
5-20
5-70x2
5-75
5-72
5-78x2
5-82x2
5-74
5-44
5-73
5-77
5-60
5-19
5-76
5-79
5-67x2
5-80
5-21
5-63x2
5-81
5-20
5-22
5-23
5-24
5-43
5-40
5-11
5-31
5-38
5-37
5-36
5-39
5-35
5-25
5-34
5-27
5-33
5-32
5-29
5-30
5-29
5-26
5-28
5-54x4
5-55x2
5-55
5-56
G5645Professional

Ⅱ REASSEMBLY AND ADJUSTMENT

1. Friction of film take up shaft.

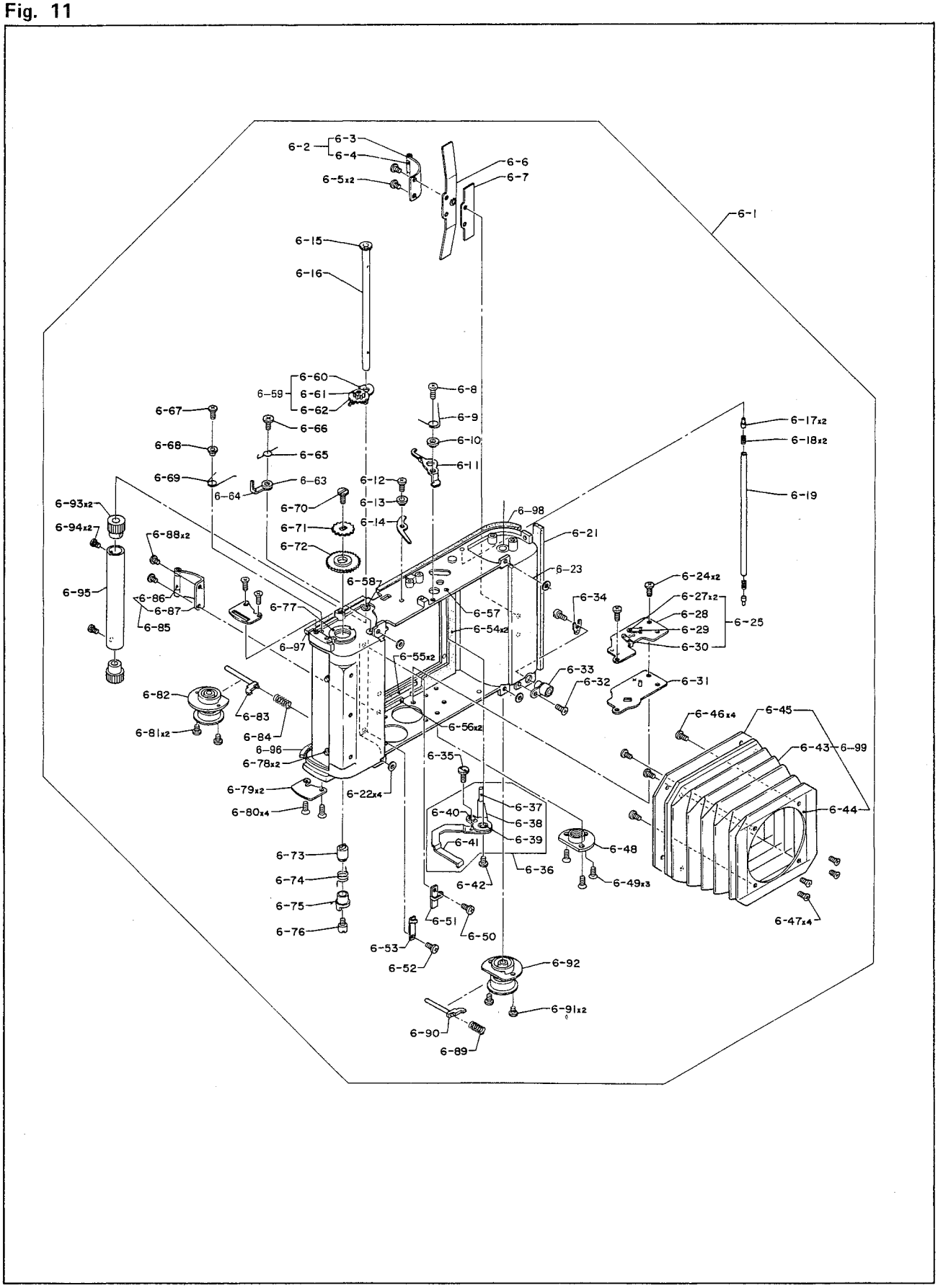
One stroke of the film advance lever consists of one frame film feeding and shutter charging. Film feeding length differs depending on diameter of the film wound up on the film take up shaft.
For the above reasons, the film take up shaft must have a proper friction so that no force is applied to the film take up shaft by the number of turns of the counter roller.

- The spring (6 - 74) functions to provide the film take up shaft with a proper friction. If this spring does not operate smoothly, the film advance lever will not operate smoothly.
  Apply a sufficient volume of Helicolube/Molycote mixed grease.

2. Air discharging groove of the bellows

When the bellows is opened rapidly after loading a film, the bellows will shrink as vacuum occurs within the space.
To prevent this occurrence, the camera body has grooves, and to prevent light leakage through the grooves, moquette is used.
The moquette is located behind the rail surface.
Note that the function of the moquette affects both the air discharging and light shielding.

Fig. 11


6-1
6-2
6-3
6-4
6-5x2
6-6
6-7
6-8
6-9
6-10
6-11
6-12
6-13
6-14
6-15
6-16
6-17x2
6-18x2
6-19
6-21
6-22x4
6-23
6-24x2
6-25
6-27x2
6-28
6-29
6-30
6-31
6-32
6-33
6-34
6-35
6-36
6-37
6-38
6-39
6-40
6-41
6-42
6-43
6-44
6-45
6-46x4
6-47x4
6-48
6-49x3
6-50
6-51
6-52
6-53
6-54x2
6-55x2
6-56x2
6-57
6-58
6-59
6-60
6-61
6-62
6-63
6-64
6-65
6-66
6-67
6-68
6-69
6-70
6-71
6-72
6-73
6-74
6-75
6-76
6-77
6-78x2
6-79x2
6-80x4
6-81x2
6-82
6-83
6-84
6-85
6-86
6-87
6-88x2
6-89
6-90
6-91x2
6-92
6-93x2
6-94x2
6-95
6-96
6-97
6-98
6-99

3. Adjustment of parallelsim of the front cover mechanism assembly

- The optical axis of the lens must be perpendicular against the film plane, or otherwise, focusing cannot be made correctly.
- Based on the film plane, adjust parallelism of the lens plane.

[METHOD]

Special tools and instrument to be prepared.

Base plate (J11286)

Reflector (J11303)

Collimater (Gokosha Model)

a. Check the optical axis of the collimater and right angle (perpendicular alignment) of the base plate.

b. Place the rail plane on the base plate, and place the reflector on the front sace of the lens.
When the name ring is installed, remove it. [Watch the front of the front lens assembly frame.]

c. Set the collimater to the inifinite (∞), check the reflected image, and adjust the parallelism by loosening eight set screws (5 - 5) so that the reflected image is in the center.
The rating is within 30'. The parallelism is satisfactory as long as the image is within the field of view frame of the collimator (Gokosha Model).

d. When the parallelism is adjusted completely, lock the eight set screws (5 - 5) with screw locking agent (Alonalpha or Sumicatight).

When the parallelism cannot be adjusted with the set screws (5 - 5):

- Visually check that the housing is installed in parallel to the gate (5 - 76).
- Check that the stopper portion of the base plate (5 - 60) is not deviated horizontally. When deviated, it may be adjusted by bending.
- Make sure that the front cover mechanism assembly has risen completely.

Fig. 12

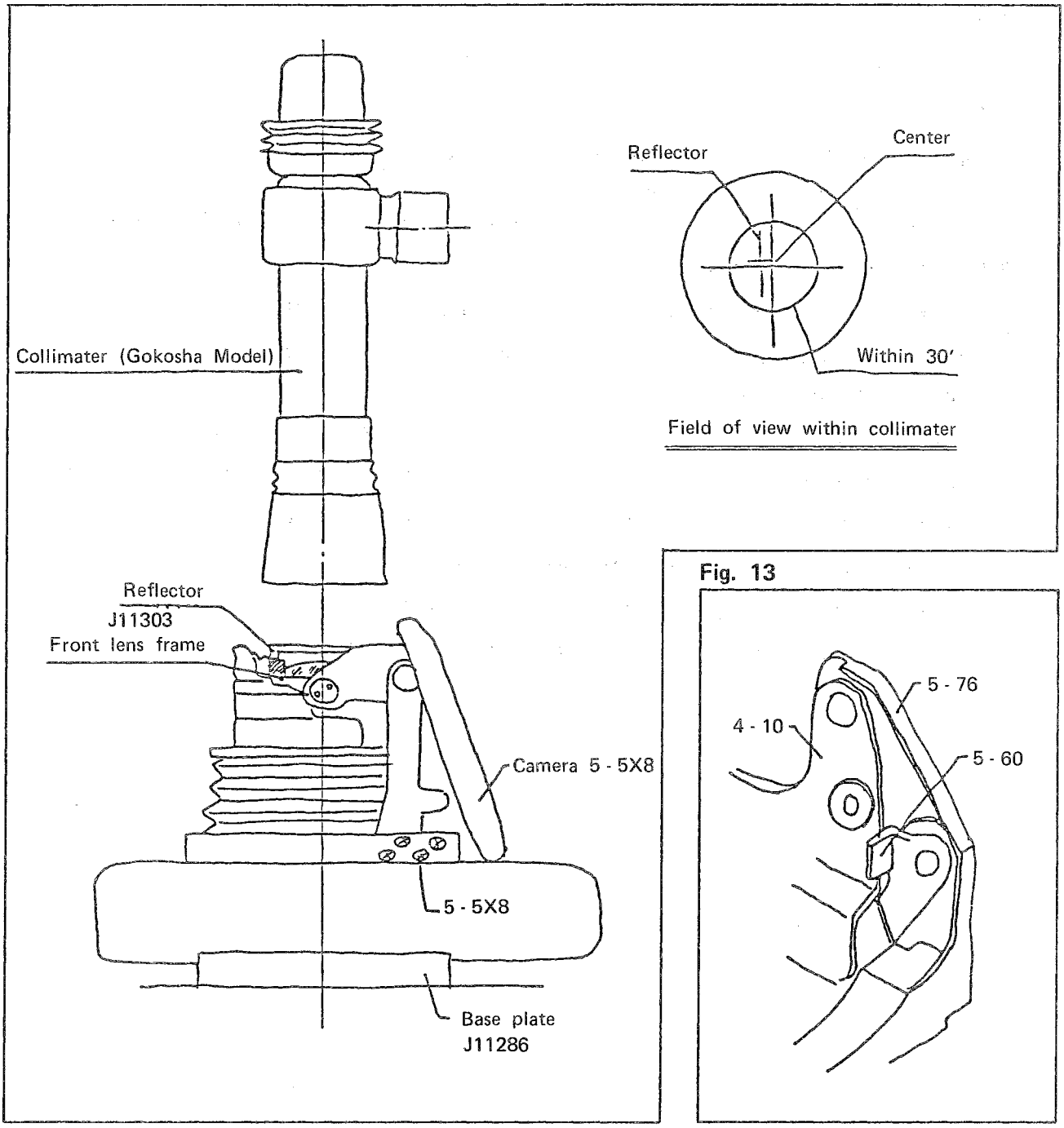

Collimater (Gokosha Model)
Reflector
J11303
Front lens frame
Camera 5 - 5X8
5 - 5X8
Base plate
J11286
Reflector
Center
Within 30'
Field of view within collimater

Fig. 13

5 - 76
4 - 10
5 - 60

4. Adjustment of shutter setting

Adjustment of wire

- Adjust two eccentric pins (3 - 49) to adjust set value.

[Ideal set position]

Release the shutter, watch the gap between the set lever (5 - 33) and base plate (5 - 60), and set the gap to 1 mm from the base plate.
Make sure that the shutter can be set with a sufficient space for both the infinite and minimum distance sides.

[When shutter set is unsatisfactory at the minimum distance side]

- Check the set lever of the slider for slackness, and bend as shown in the right hand figure to adjust.
- When the slackness is excessive, replace the set lever with a new one.
- When the adjustment is completed, and the wire is too long, cut it with a cutter.
- Be sure that the wire does not come out from the large pulley.
- The wire must have an extra space against the eccentric pin.
- Apply Alonalpha to the wire edge so that it will not get loose.
- Make sure that the wire is not damaged or bent sharply.

Fig. 14

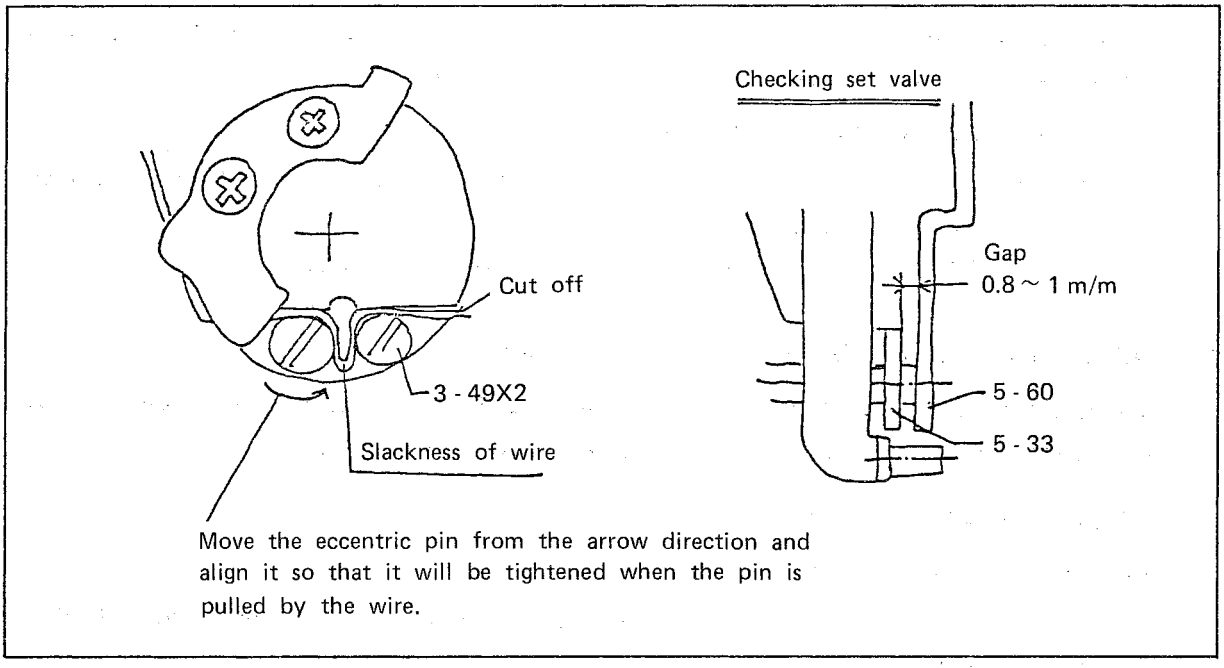
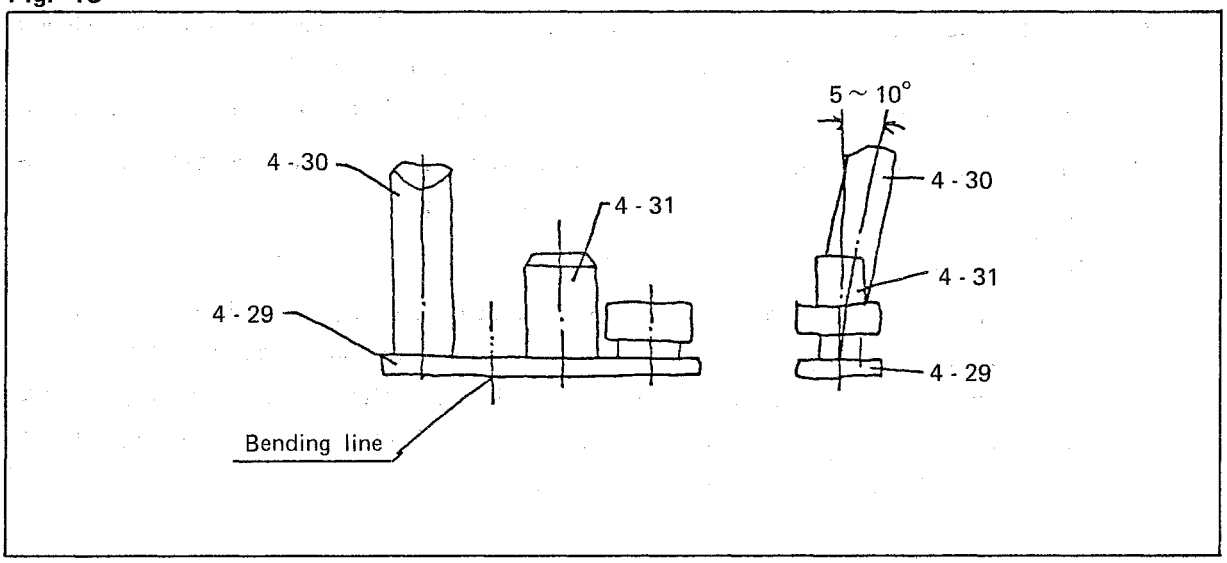

Checking set valve
Cut off
3 - 49X2
Slackness of wire
Gap
0.8 ~ 1 m/m
5 - 60
5 - 33
Move the eccentric pin from the arrow direction and align it so that it will be tightened when the pin is pulled by the wire.

Fig. 15


4 - 30
4 - 31
4 - 29
Bending line
5 ~ 10°
4 - 30
4 - 31
4 - 29

5. Adjustment of focusing (Infinity adjustment)

- ○ Set the collimater to ∞.
- ○ Watch the film plane, and fix the ∞ side stopper of the helicoid at the position where image of the collimater is correctly focused.
- ○ To adjust, loosen four set screws (4 - 51).

NOTE: Set the film plane within +0.05±0.1 mm (— 0.05 to +0.15 mm) against the rail plane.
[Set film side to +0.05 mm against the rail plane.]

6. Adjustment of viewfinder (Coincidence of images)

To adjust coincidence of the stationary image and moving image, the screw (2 - 15) (for height) and eccentric pin (2 - 22) (for left or right) are used.

[Adjustment procedure]

Coincidence of inifinite image

(1) Apply the lens to the ∞ side stopper and coincide the moving image with the stationary image.

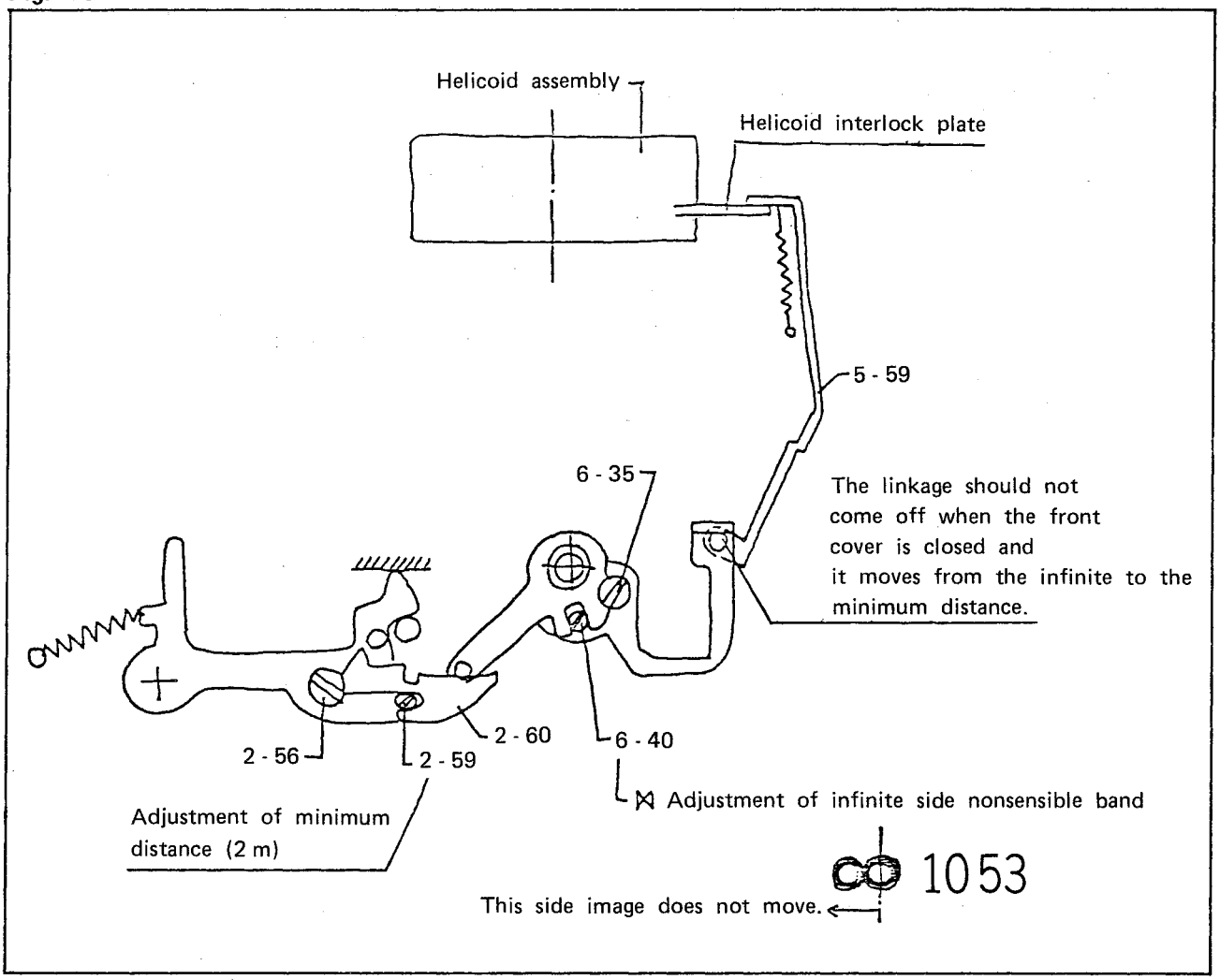
(2) Fix the helicoid at the position where an image in 2 meter distance is focused on the film plane, and watch the coincidence in the viewfinder.
When the image is deviated to the right or left, adjust the eccentric pin (2 - 59).

(3) Check the infinity, and repeat the adjustment until the focusing performance is within the permissible range (— 0.05 to +0.15 mm).

(4) Setting infinite image non - sensing band

Adjust the eccentric pin (6 - 40) of the linkage assembly (6 - 36) so that the image in the infinite side is in the non - sensing band at ¼ of the ∞ mark and thereafter. [Provide a proper gap by bending the linkage assembly so that the image coincidence in the viewfinder is not affected even if the engagement of the interlock lever changes.]

Fig. 16


Helicoid assembly
Helicoid interlock plate
5 - 59
6 - 35
The linkage should not come off when the front cover is closed and it moves from the infinite to the minimum distance.
2 - 56
2 - 59
2 - 60
6 - 40
Adjustment of infinite side nonsensible band
Adjustment of minimum distance (2 m)
This side image does not move.
1053

○ Adjustment of viewfinder (parallax)

Adjust deviation between the picture frame on the film plane and viewfinder frame.

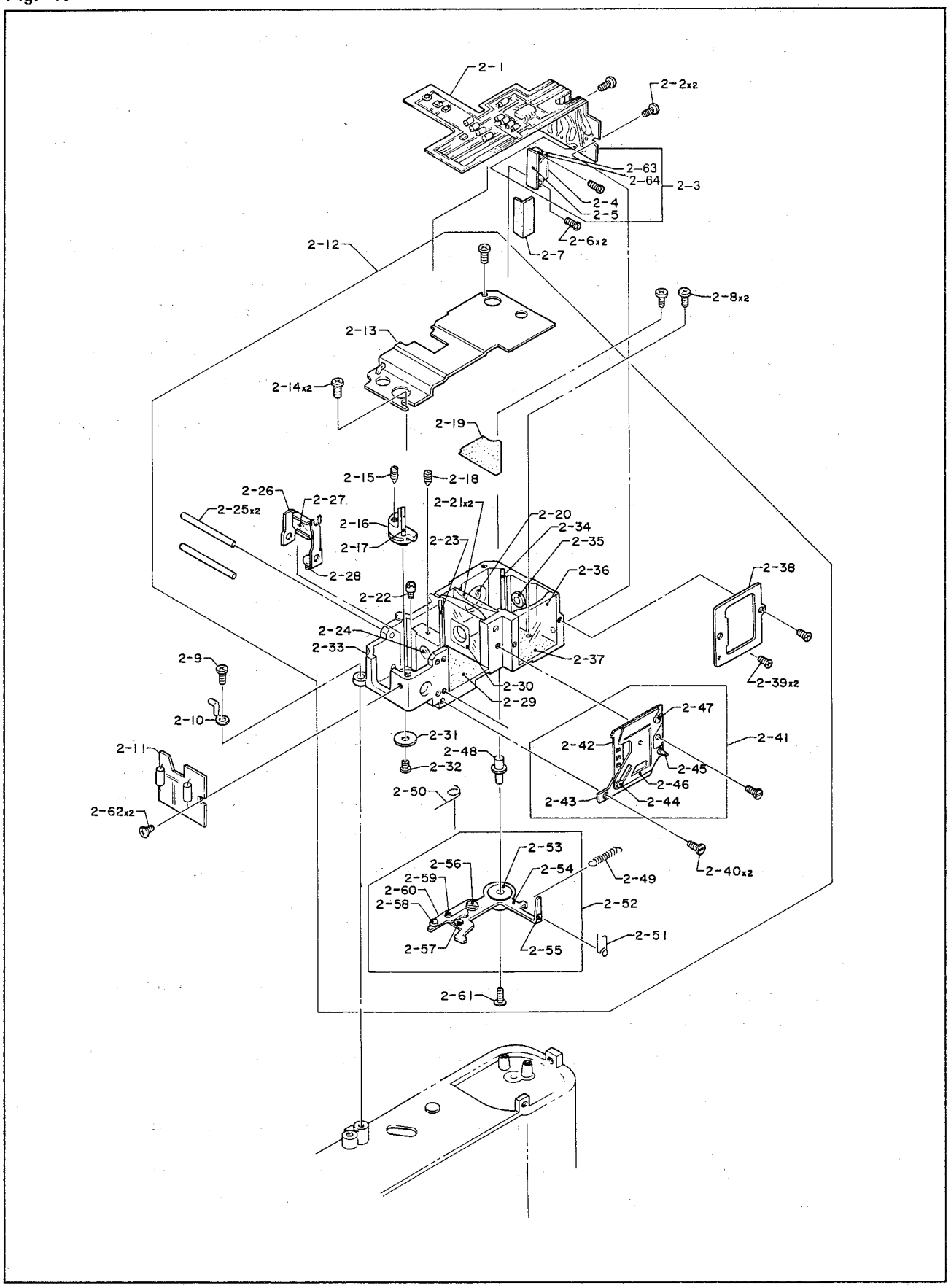
To adjust it, adjust position of the viewfinder frame assembly (2 - 41) with two screws (2 - 40).

When the parallax is adjusted for the infinite, make sure that it is not deviated remarkably at the minimum distance (1 m).

Adjustment of moving image focusing

With the bar prism (2 - 24), focusing of the moving image can be coincided with the stationary image.

Fig. 17


2-1
2-2x2
2-63
2-64
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2-6x2
2-7
2-12
2-8x2
2-13
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2-25x2
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2-48
2-42
2-32
2-45
2-46
2-50
2-43
2-44
2-62x2
2-40x2
2-53
2-56
2-54
2-49
2-59
2-60
2-58
2-52
2-57
2-55
2-51
2-61

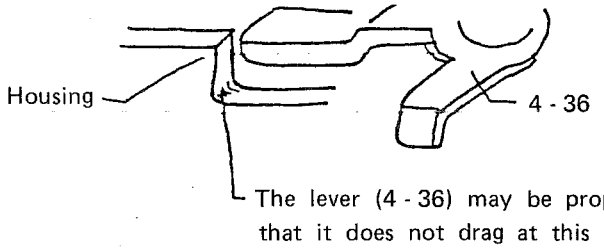
7. Film advance/shutter charge system

7 - 1 Shutter charging and releasing mechanism

- ○ When the film advance lever is wound up, the large pulley assembly (3 - 42) takes up the wire.
- ○ The set lever (5 - 33) moves as it is pulled by the wire, and the claw (5 - 30) engages with the slider assembly (4 - 24) causing the slider assembly to operate.
- ○ The shutter set lever is set by the slider assembly (4 - 24).
- ○ When the film advance lever is returned, the large pulley assembly (3 - 42) returns until it is hooked by the release plate assembly (3 - 11). Then the set lever (5 - 33) also returns due to the spring (5 - 27).
- ○ The slider assembly (4 - 24) is also returned by the spring (4 - 18), and the lever (4 - 36) returns until it is hooked by the housing.

[When the shutter is released as soon as the shutter is charged or as the front cover is closed]

Cause No. 1 : The lever (4 - 36) does not hook correctly.



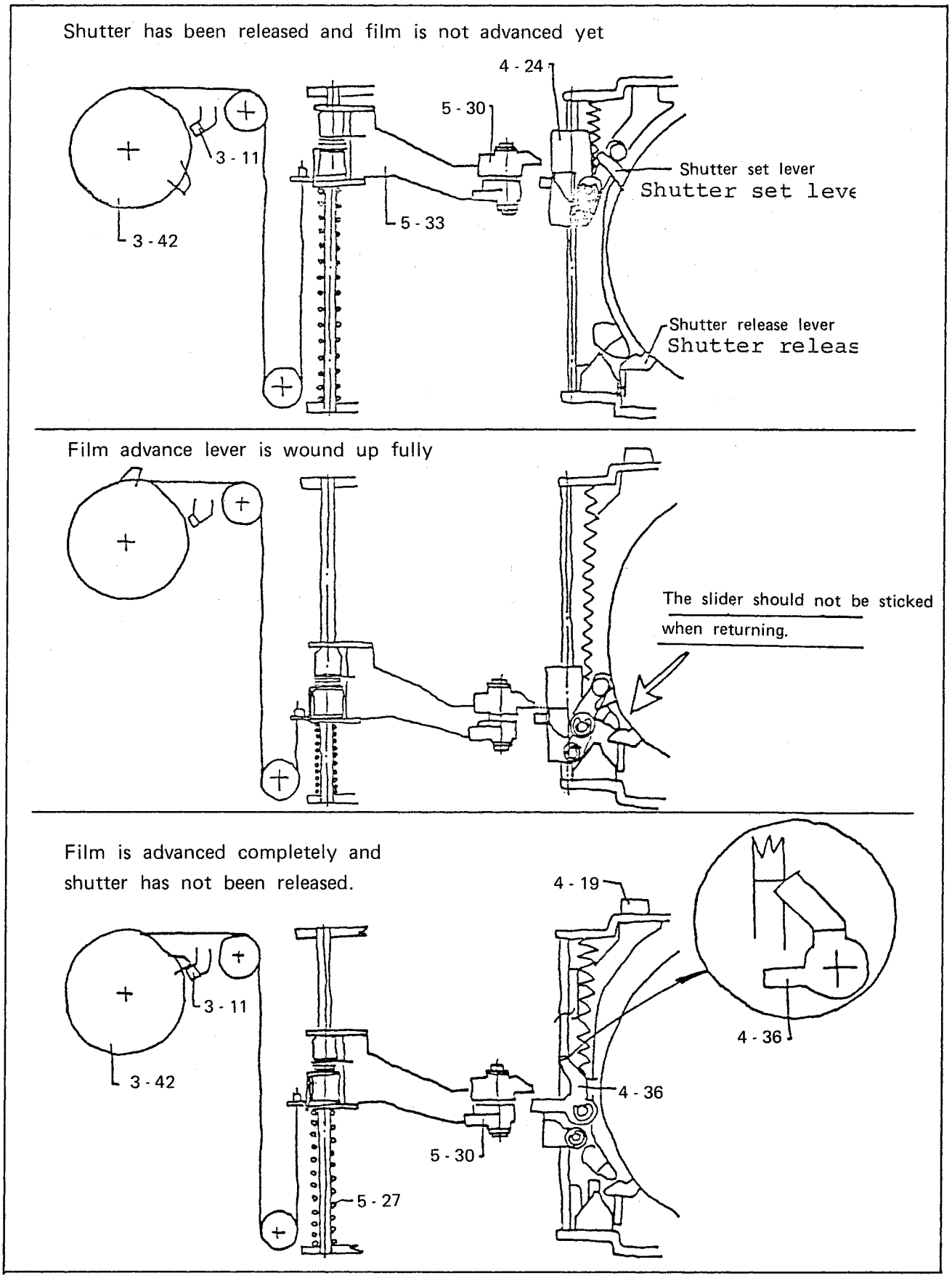
Cause No. 2 : Take - up set value is insufficient, and therefore, the claw (5 - 30) releases the lever (4 - 36) as soon as the shutter is charged. When the shutter is charged, there must be a proper gap between the claw (5 - 30) and lever (4 - 36).

Cause No. 3 : The engagement between the large pulley assembly (3 - 42) and release plate assembly (3 - 11) is improper.

○ Shutter release

- ★ When the shutter release button is pressed, the release plate assembly (3 - 11) disengages with the large pulley assembly (3 - 42).
- ★ When the large pulley assembly is freed, the spring (5 - 27) causes the set lever to move.
- ★ The claw (5 - 30) disengages the lever (4 - 36), causing the slider to move.
- ★ The lever is pushed (4 - 19) is pushed by the slider, causing the shutter release lever to move, and thus, the shutter opens and closes.

Fig. 18


Shutter has been released and film is not advanced yet
4 - 24
5 - 30
3 - 11
3 - 42
5 - 33
Shutter set lever
Shutter release lever
Film advance lever is wound up fully
The slider should not be sticked
when returning.
Film is advanced completely and
shutter has not been released.
4 - 19
3 - 11
3 - 42
4 - 36
4 - 36
5 - 30
5 - 27

○ T - mode

When the lever (4 - 19) is pushed from the outside, the release lever moves causing the shutter to be opened in a half way.
The shutter does not operate to close because the shutter set lever is locked by the slider in the shutter charged position.
When the shutter release button is pressed, allowing the slider to run, the set lever operates, causing the shutter blade to close.

The shutter is not released.

○ When the shutter is charged completely but the shutter cannot be released or slider does not run as the shutter release button is pressed (occasional occurrences are also included).

⇩

The shaft holder portion of the large pulley assembly (3 - 42) is heavy.

Repair : Clean the shaft. Do not use grease.

○ The slider runs but the shutter blade does not open (occasional occurrences are also included)

⇩

Insufficient shutter charging.

Repair : The shutter must be charged with a sufficient setting strokes at both the minimum distance and infinity sides.
When the shutter charging is minus at the minimum distance side, refer to II - 4 above.

7 - 2 Film take - up mechanism

The exposure counter does not advance unless the counter roller is turned with a film loaded.

a. Advancing film from S to 1

- When a film is loaded and the film advance lever is wound up, the counter roller (6 - 93) is turned to the arrow direction by the film.
- As the counter roller (6 - 93) turns the counter dial (3 - 51) is advanced.
- The film advance lever can be wound up successively until the 1st frame is indicated by the exposure counter.
- When the film is wound up to the 1st frame, the edge of the counter dial disengages with the rising portion (A) of the lever (3 - 121), allowing the lever (3 - 121) to turn to the arrow direction.
- When the disc (3 - 85) turns and the groove is coincided with the lever (3 - 121), the lever drops into the groove, and the lever (6 - 64) engages with the ratchet wheel (6 - 72).
- When the ratchet wheel (6 - 72) stops, the film taking - up force acts as a friction, causing the film taking - up (advance) to stop.
  The film advance lever can be wound up continuously until the swing lever (3 - 78) disengages with the ratchet even after the film stops.

Fig. 19

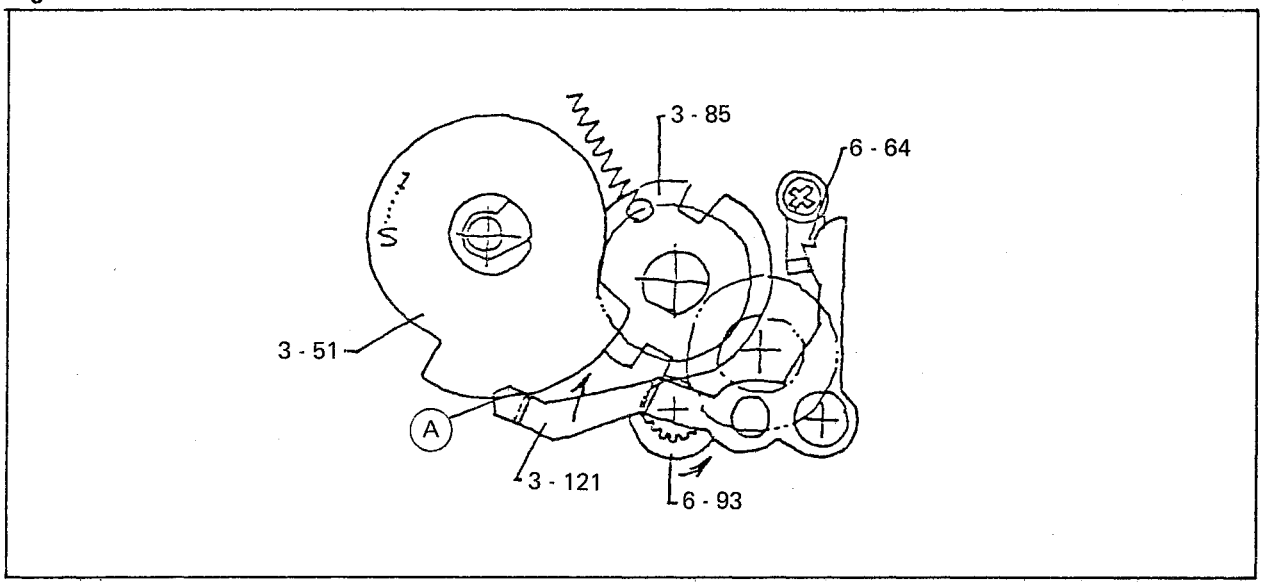
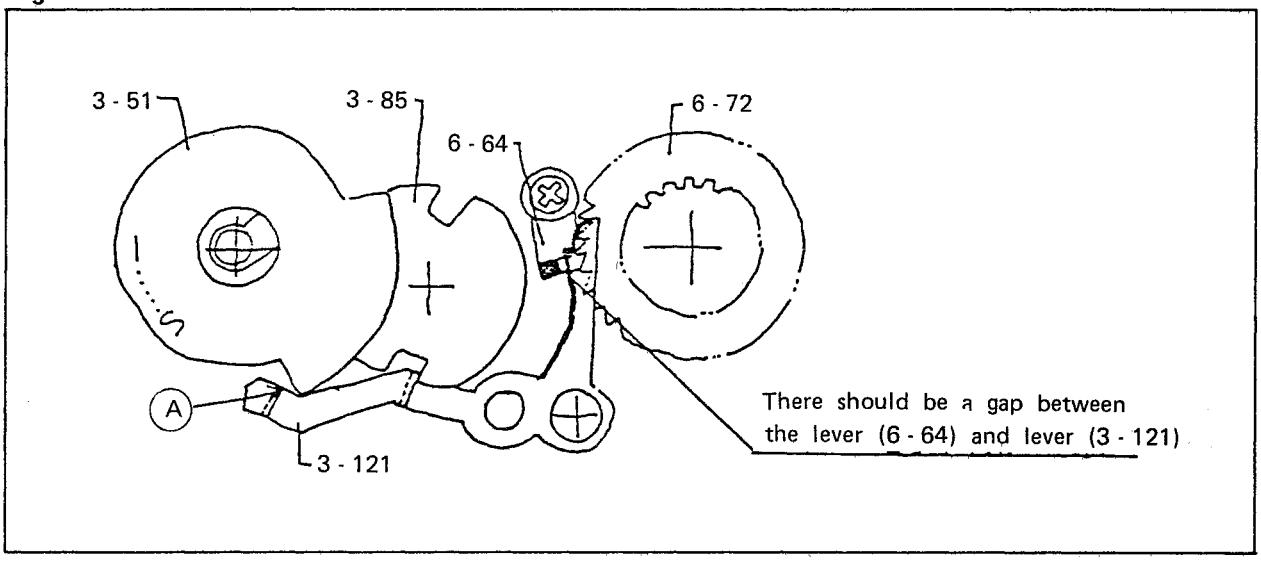

3 - 85
6 - 64
3 - 51
A
3 - 121
6 - 93

Fig. 20


3 - 51
3 - 85
6 - 64
6 - 72
A
3 - 121
There should be a gap between
the lever (6 - 64) and lever (3 - 121)

b. Advancing film to the next frame

★ When the film is advanced to the 1st frame and the shutter is charged completely, the relative parts are set as shown below so that double exposure can be prevented.
The lever (3 - 109) engages with the swing lever (3 - 78) with the swing lever (3 - 78) opposed to the ratchet wheel assembly (3 - 54).
The swing lever (3 - 78) functions as a stopper, and the ratchet wheel assembly (3 - 54) cannot turn.

★ When the shutter is released, the release lever assembly (3 - 64) is pushed by the cam (3 - 46) of the large pulley assembly (3 - 42), and the lever (3 - 121) joined with the release lever assembly (3 - 64) moves.

Fig. 21

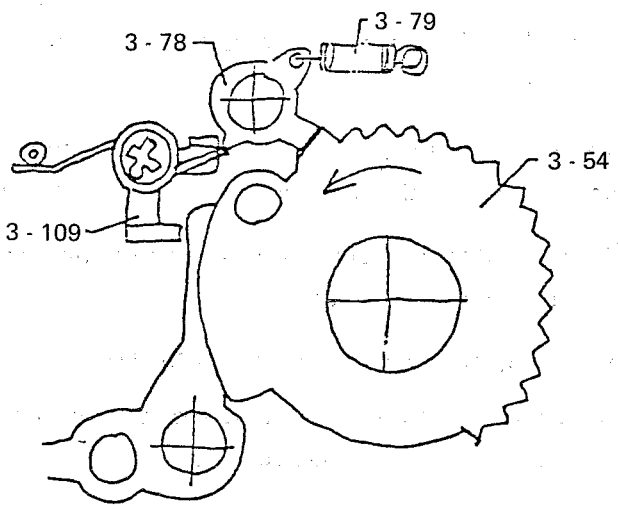
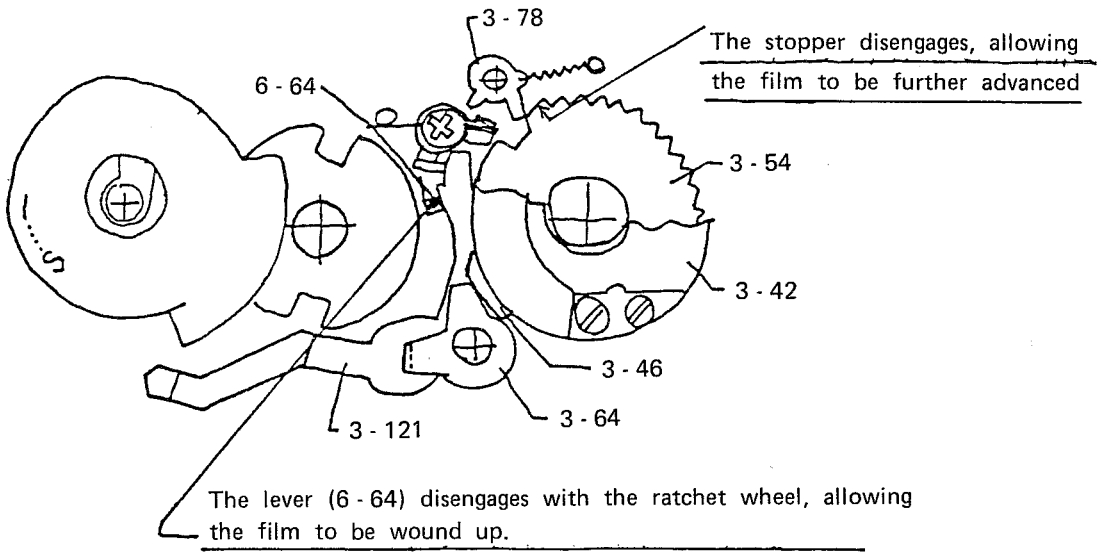

3 - 78
3 - 79
3 - 54
3 - 109

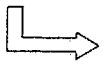
Fig. 22


3 - 78
The stopper disengages, allowing the film to be further advanced
6 - 64
3 - 54
3 - 42
3 - 46
3 - 64
3 - 121
The lever (6 - 64) disengages with the ratchet wheel, allowing the film to be wound up.

★ When beginning to advance the film and the release lever assembly (3 - 64) is about to disengage with the cam (3 - 46), the groove of the disc (3 - 85) must have been separated from the rising portion of the lever (3 - 121) by the film.

If this alignment is incorrect, one frame is overlapped with another.

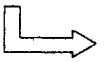
When the lever (3 - 121) is limited at the periphery of the disc (3 - 85), the lever (6 - 64) should not engage with the ratchet wheel (6 - 72).



When this arrangement is improper, one frame is overlapped with another or noise is generated.

c. Ending exposure of the last frame of a 120 film.

The lever (3 - 2) is pushed up by interlocking with the counter, and the lever (3 - 121) is kept in the released state.



Film can be wound up to the end in the manner similar to the film advancement from S to 1.

NOTE: The lever (3 - 2) must be pushed by the leaf spring (3 - 9) toward the arrow (A) direction.

Fig. 23

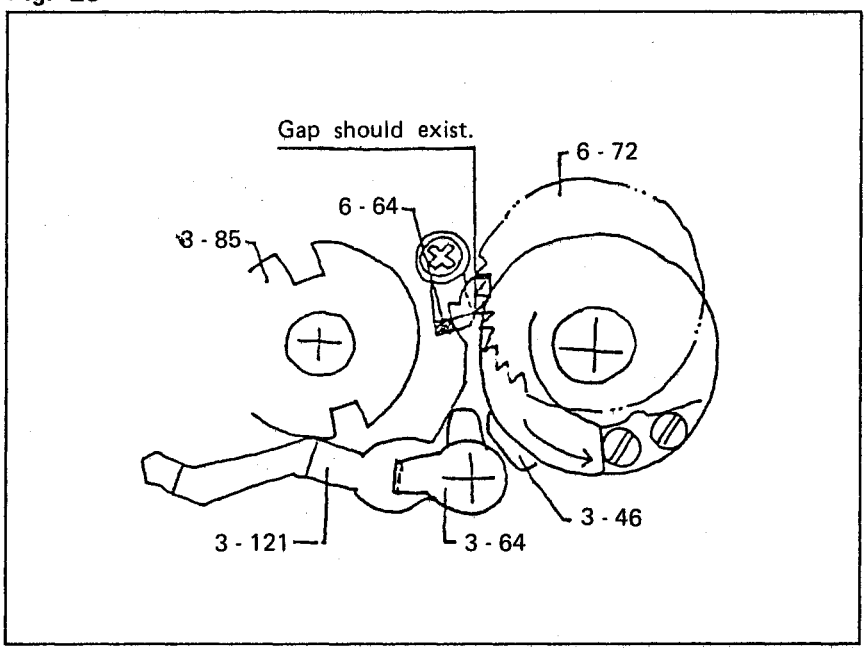
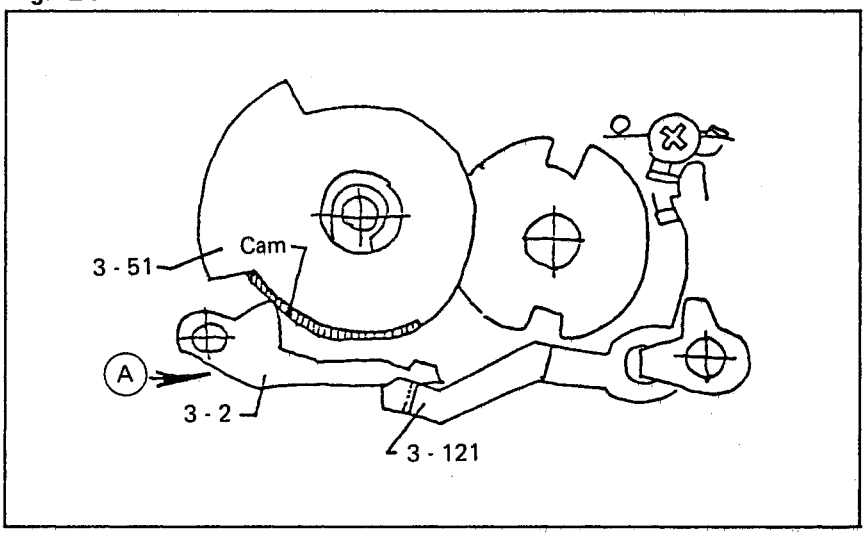


Fig. 24



d. Ending exposure of the last frame of a 220 film

The lever (3 - 2) is set to the 220 film with the film selector knob of the top cover assembly, and thus, the lever is separated from the counter dial. If the lever is not separated from the counter dial, film winding is freed at the 16th frame.

When the 30th frame is exposed, and the film advance lever is wound up, the projection of the counter dial enters beneath the lever (3 - 121), and the lever (3 - 121) is kept in the separated state.

When the lever (3 - 121) runs against the dial (3 - 51), check the film advancing timing for delay.

e. 1st frame film position

A 120 film has a mark on the film leader. Match this mark with the mark on the camera body, and advance the film to the 1st frame.

Some times, the 1st frame film position may be deviated from the number indicated on the back of the film.

This deviation should be within ±½ frame.

[When excessively deviated]

- Make sure that the disc (3 - 85) is returned to the predetermined position by the spring (3 - 82) when the film chamber door is opened.
- At position S, there should be a gap between the claw (3 - 115) and counter gear (3 - 52).

Fig. 25

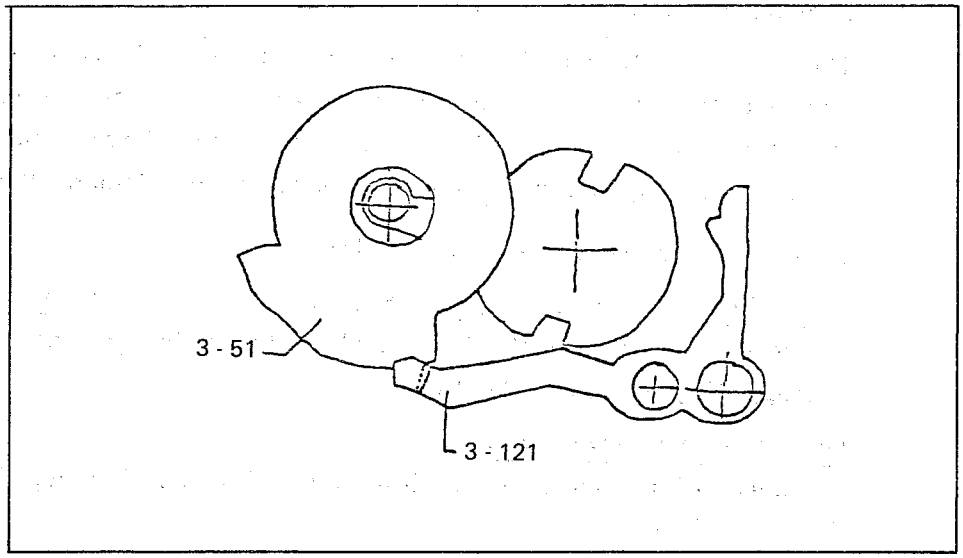
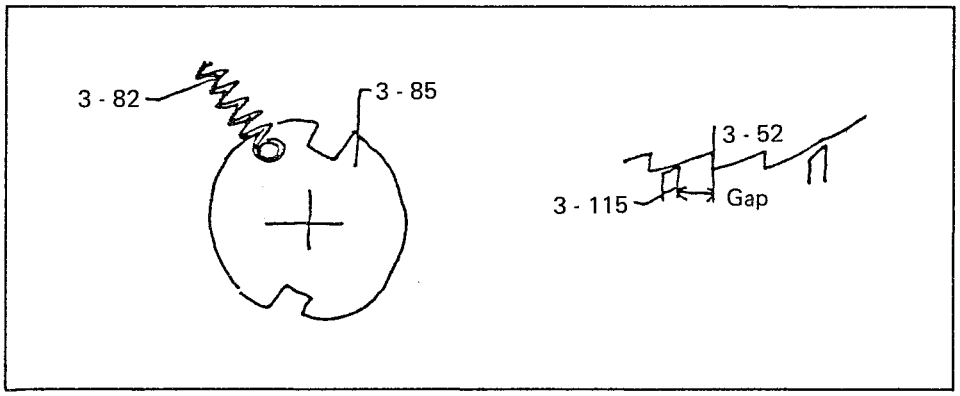


Fig. 26



8. Shutter release locking mechanism

○ Locking during winding up a film

The lever (3 - 29) is pushed by the lock plate (1 - 37), causing the lever to be separated from the lock plate (1 - 26). Then, the shutter release can be depressed. During winding up a film (Unless the film advance lever is turned completely), the lever (3 - 30) is beneath the lock plate (1 - 26), locking the shutter release.

○ Locking shutter release at other modes

When the exposure counter is in S to 1 or when no film is loaded.
Movement of the lever (3 - 33) caused by the spring (3 - 35) toward direction (A) is stopped by the cam (3 - 52).

When the cam moves away
Movement of the lever (3 - 33) toward direction (A) is stopped by the head of the lever (3 - 121).

Fig. 27

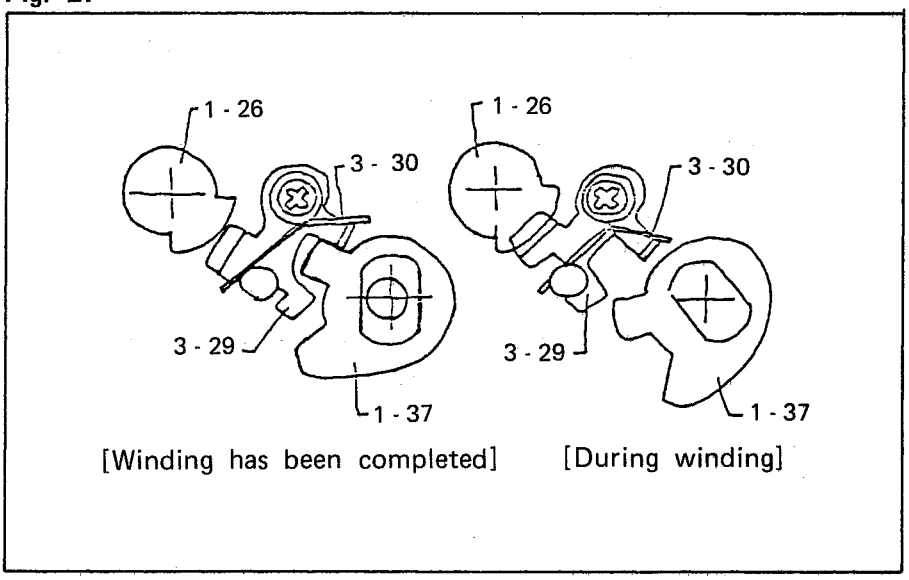
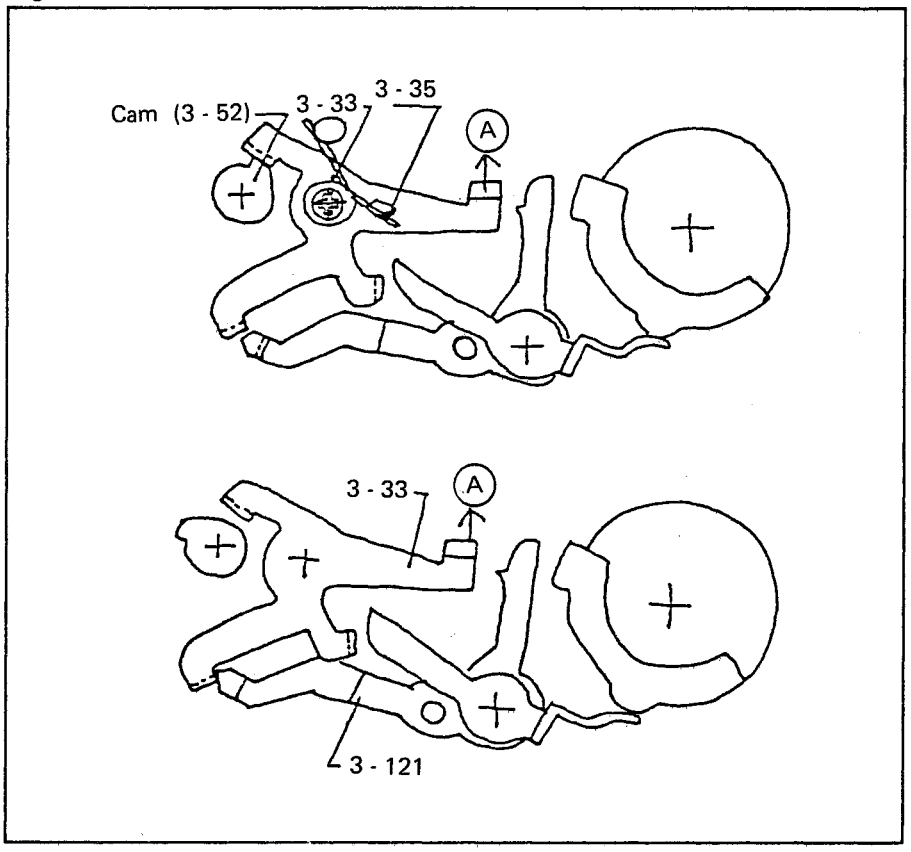

1 - 26
3 - 30
3 - 29
1 - 37
[Winding has been completed]
1 - 26
3 - 30
3 - 29
1 - 37
[During winding]

Fig. 28


Cam (3 - 52)
3 - 33
3 - 35
A
3 - 33
A
3 - 121

Before the lever (3 - 121) drops down

The lever (3 - 33) moves freely to direction (A) because the lever (3 - 121) has run away. Therefore, movement of the lever (3 - 33) is stopped by the lever (3 - 40).

When the film ends

When the 16th frame (120 film) or 31st frame (220 film) is exposed, the lever (3 - 121) runs away.
Then the head of the lever (3 - 121) disengages, causing the lever (3 - 33) to move toward direction (A), and thus, the shutter release is locked.

Fig. 29

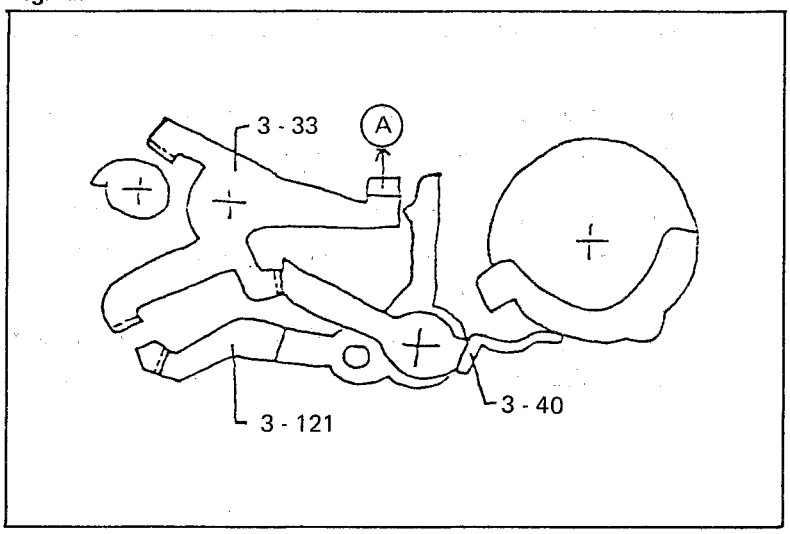
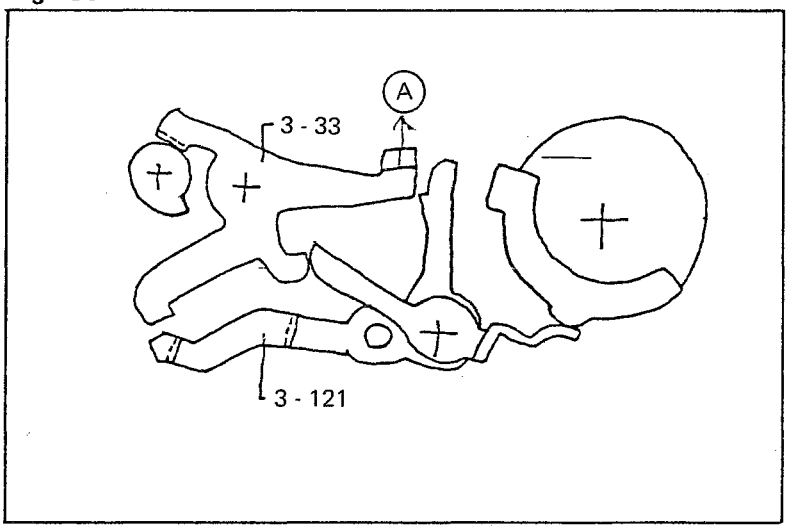


Fig. 30

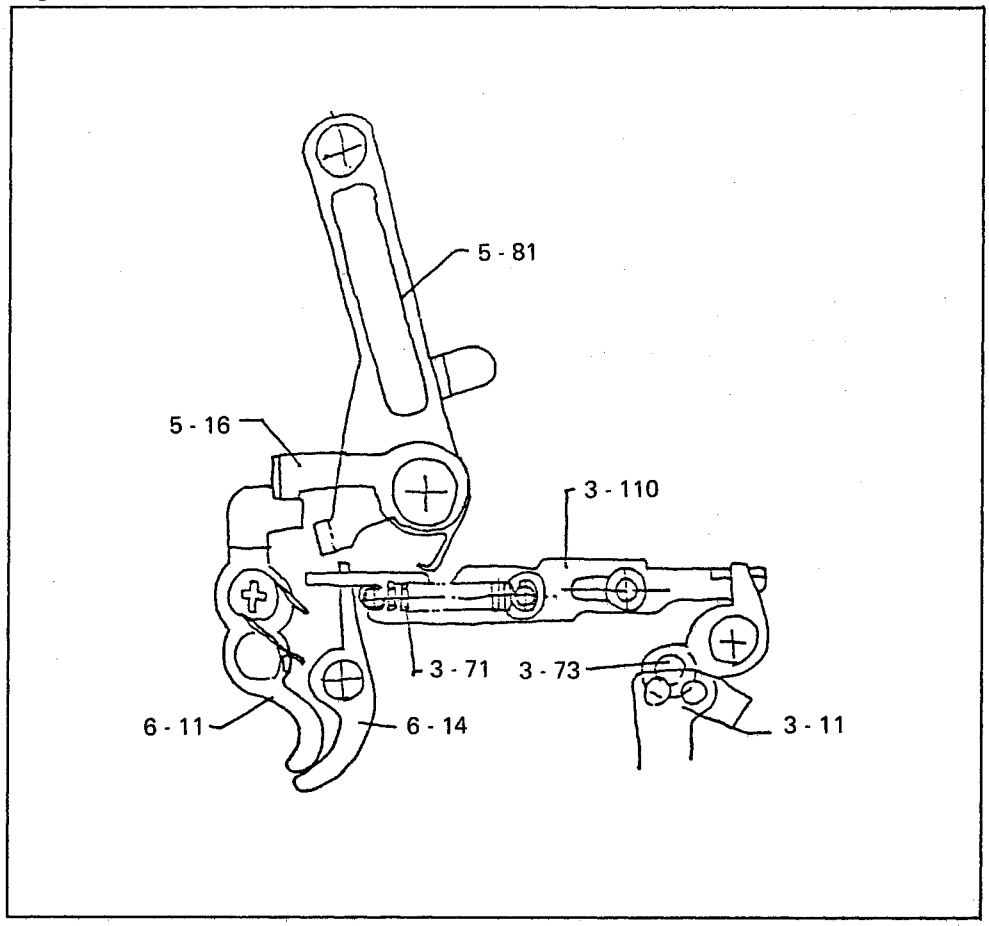


○ Locking the shutter release when the front cover mechanism is in the folded state.

The leaf spring (5 - 16) locks the lever (6 - 11), causing the interlock lever (3 - 110) to be pulled.
Then, the shaft (3 - 73) enters beneath the release plate assembly (3 - 11).
Thus, the shutter release cannot be depressed.

When the shutter release is not locked normally, check the leaf spring (5 - 16).
If this leaf spring is disengaged with the guide shaft (5 - 13), positioning cannot be made correctly.
Check the set screw (5 - 20) to insure that it is tightened securely.
Check that the lever (3 - 110) is caused to move smoothly by the spring (3 - 71).

Fig. 31



9. Front cover linkage mechanism

[MOTION]

[Opening]

- The lock levers (5 - 62 and 5 - 80) must hold the collar (4 - 6) securely.

  ↳ The housing is held by the rising portion of the base plate (5 - 60) and collar (4 - 6).

- Check hooks (A), (B) and (C) to insure that they are functioning correctly.
- Pay particular attention on the relationship between the springs (5 - 42 and 5 - 43) and levers (5 - 80 and 5 - 62).
  The springs should not be held or bit. Further, the spring force must be transmitted to the levers smoothly.
- Use a collar of the optimum diameter.
- The caulking must have been made correctly.

[Closing (Folding)]

Make sure that the hooks (A), (B) and (C) (6 positions) disengage correctly when the push lever (5 - 50) is pressed.

Fig. 32

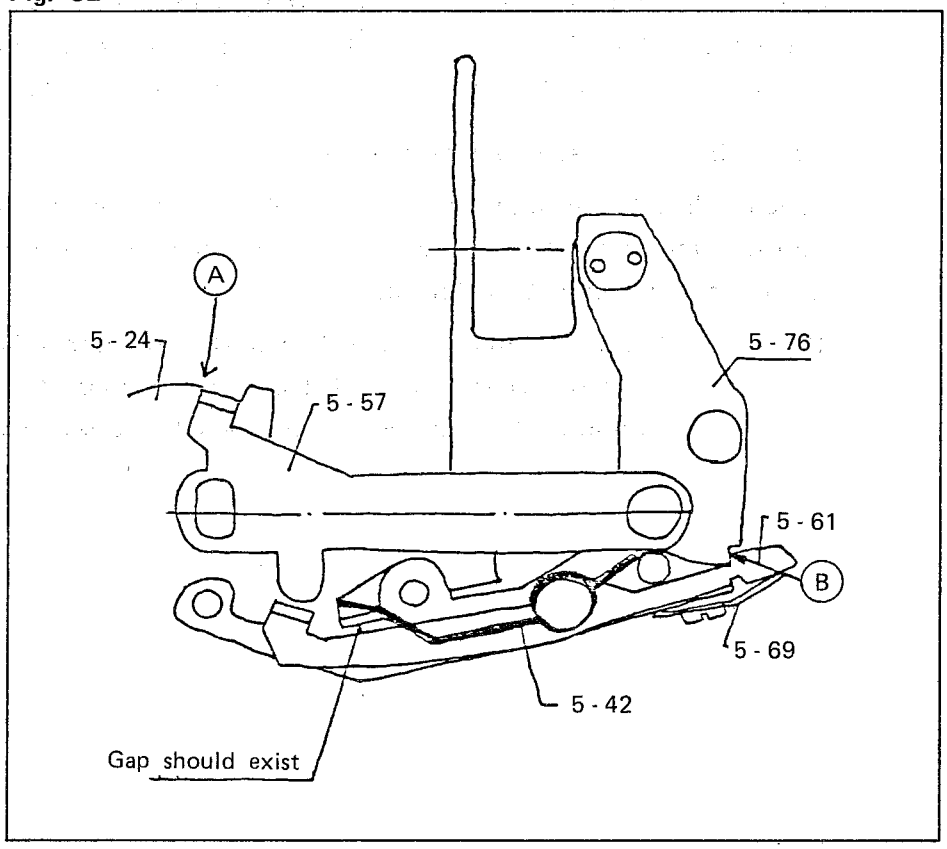
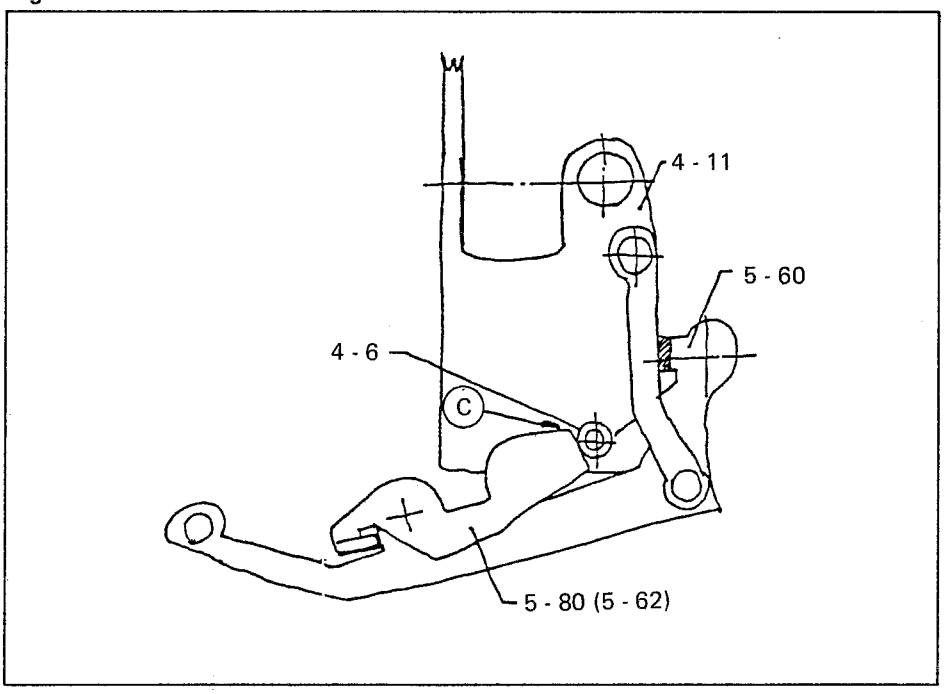


Fig. 33



○ Folding the linkage mechanism

Smoothness of folding is affected by strength of the bellows.
When the bellows is deformed, apply water to the interior of the bellows, reform it, and leave it for 24 hours or longer with the bellows folded.

○ Lens infinity set safety set safety mechanism

Except when the focusing ring of the helicoid assembly (4 - 41) is in the inifinite position, the lever (4 - 3) engages with the arm of the base plate, causing the linkage mechanism not be folded.

REASON: When the front cover is folded at a position other thatn the infinity, the cover cannot be folded correctly because the lens is moved forward. This also causes the lens to be scratched.

Fig. 34

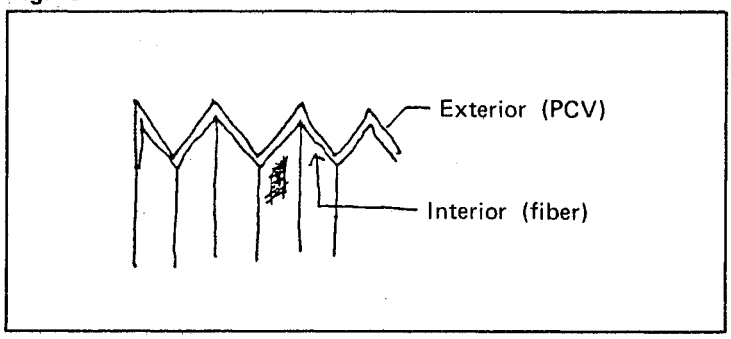
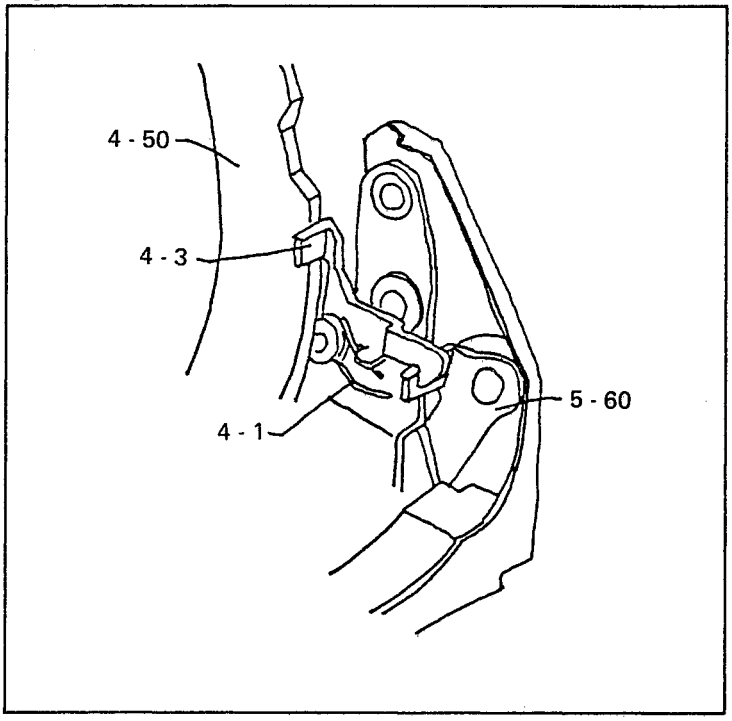


Fig. 35

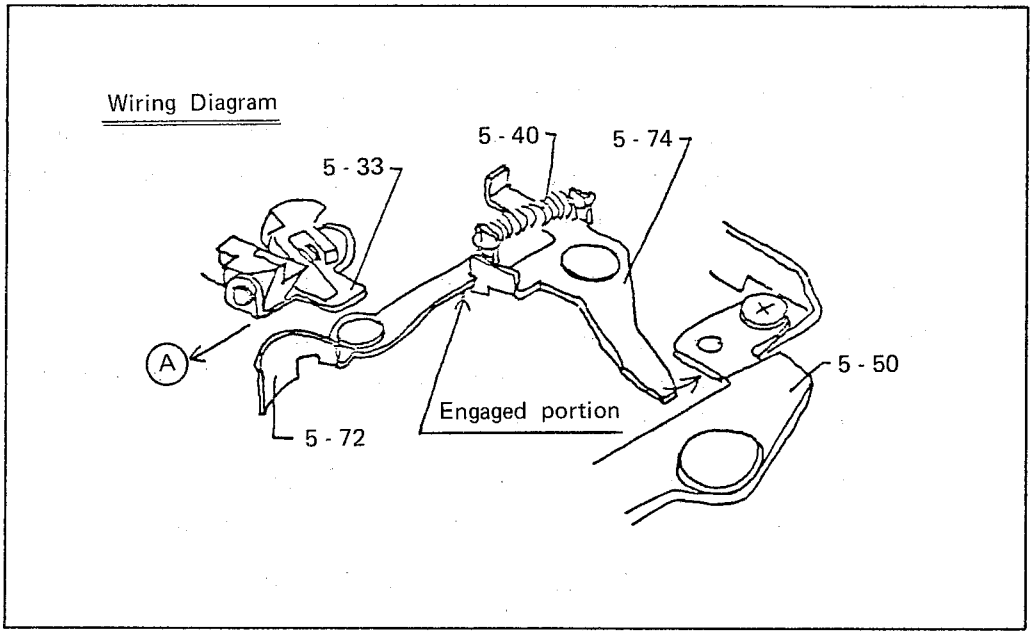


○ Film advance end sensing safety mechanism

When the film is advanced to the next frame, the hook portions of the levers (5 - 72 and 5 - 74) engage, the lever (5 - 74) runs away from the push lever (5 - 50), and the front cover can be folded.
When the shutter is released, the set lever (5 - 33) moves to the arrow (A), the levers (5 - 72 and 5 - 74) disengage, the head of the lever (5 - 74) enters beneath the push lever (5 - 50), causing the front cover not to be folded.

When the film advance lever is wound up, the set lever (5 - 33) pushes the lever (5 - 40), causing the above shown engaged portion to be engaged.

Fig. 36



10. Adjustment of electrical circuit

○ Wiring

Perform wiring by referring to the wiring diagram.
No short - circuit or bridged soldering should exist.
Pay particular attention on the lead wires extended from the shutter assembly so that they are not held between parts or they are not pulled unreasonably.
The lead wires may be broken.

○ Adjustment of S. F. T. value potentiometer voltage

To adjust this voltage, use variable resistor VR1.
Measure voltage across the terminals to which blue and green lead wires are connected from the shutter assembly.

Adjust voltage so that $V_2 - V_1 = 373.1 \pm 2$ mV.

where, V_1 : Voltage at ASA 1600 T 1/1 F3.4

V_2 : Voltage at ASA 25 T 1/500 F22

○ Adjustment of voltage across IC Pin No. 5 and 16

To adjust this voltage, use VR3. The rated voltage is 205±2 mV.

○ Adjustment of LED display

Adjust variable resistor VR2 so that the center LED lights at the following settings.

ASA : 100

F : 5.6

T : 1/125

LV : 12 (Brightness 1800 rlx.)

In this case, used K - value is 1.3.

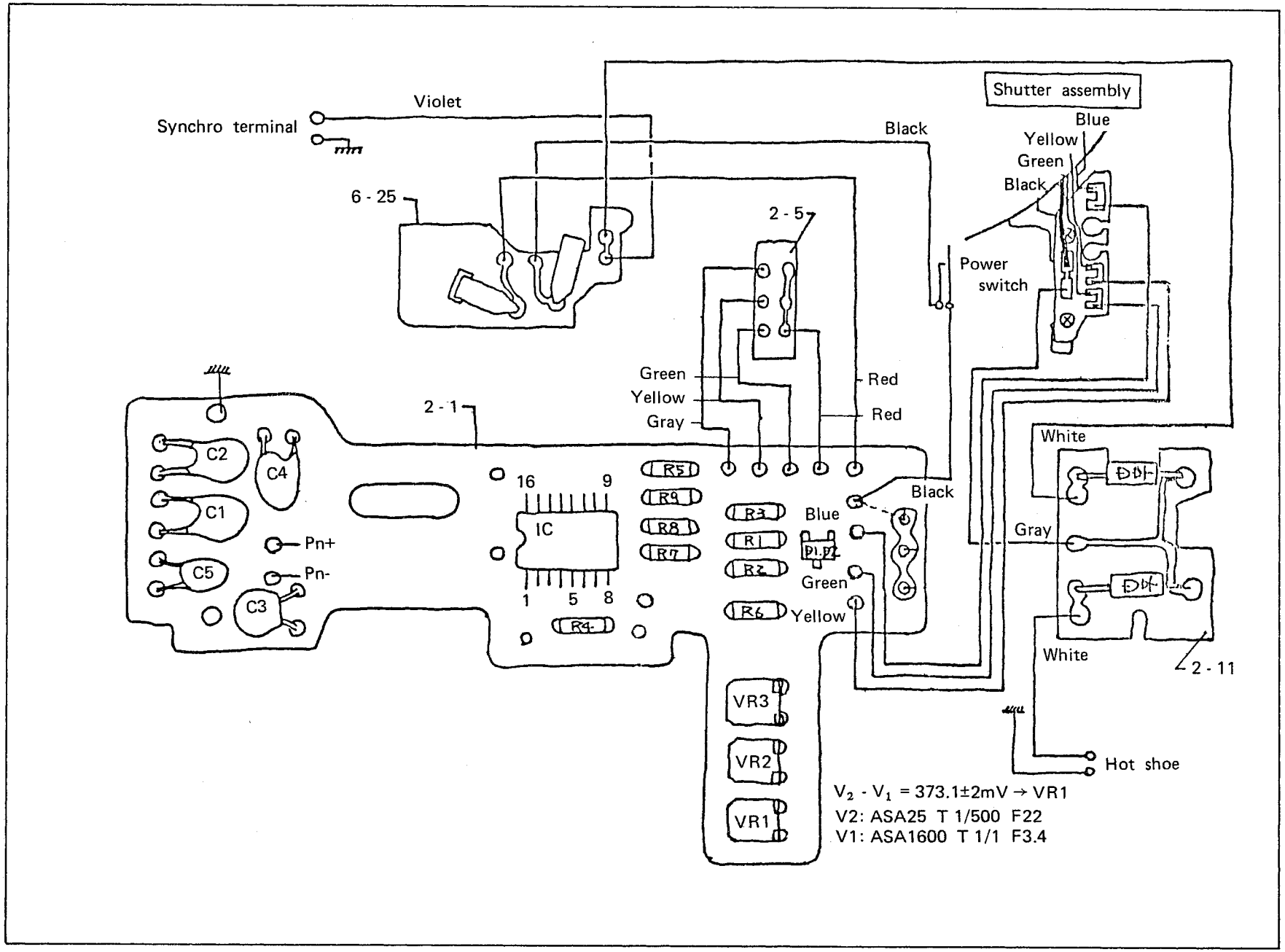
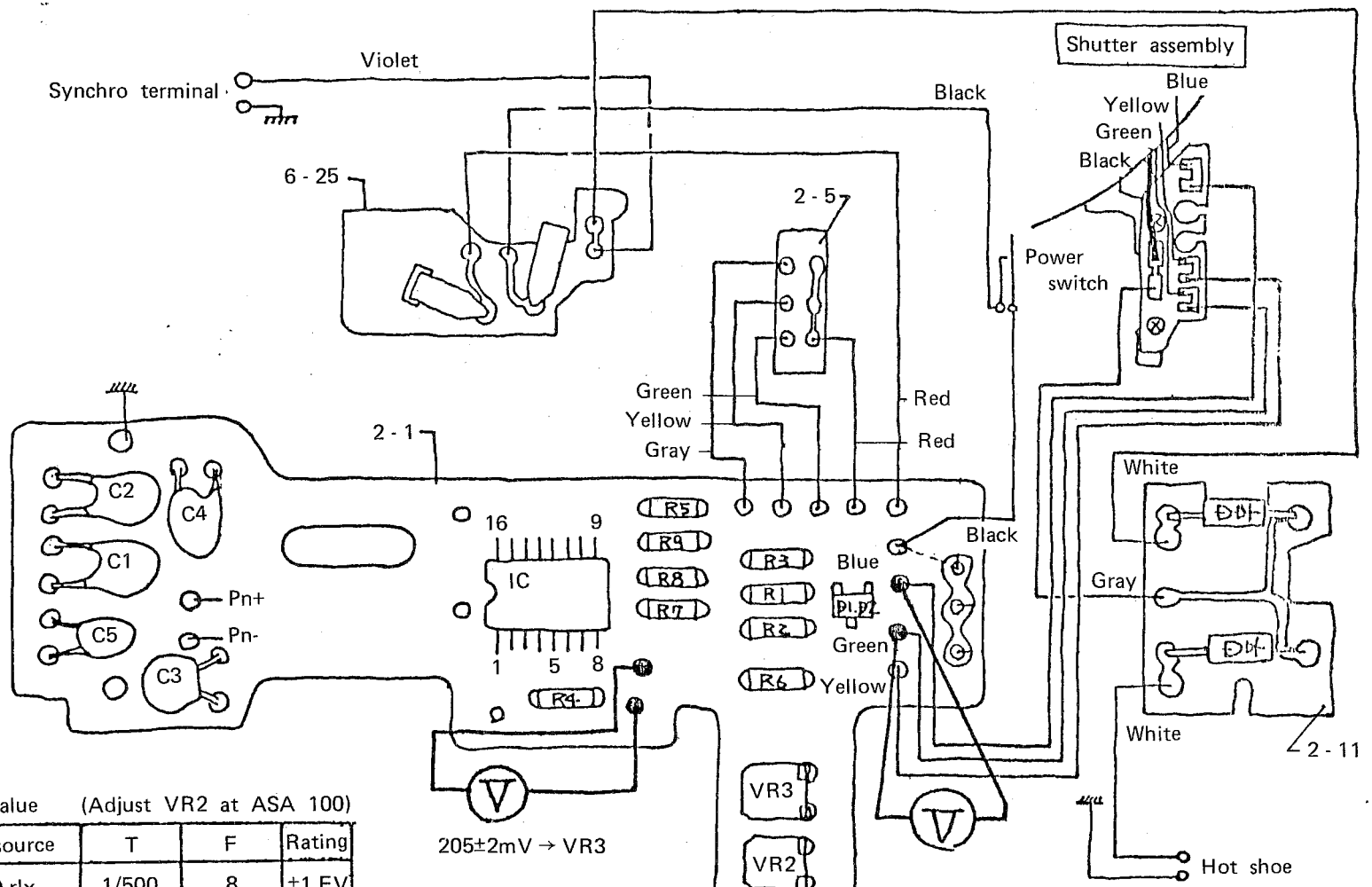

Shutter assembly
Synchro terminal
Violet
Black
Blue
Yellow
Green
Black
6 - 25
2 - 5
Power switch
Green
Yellow
Gray
Red
Red
2 - 1
White
C2
C4
C1
C5
C3
Pn+
Pn-
16
9
IC
1
5
8
R5
R9
R8
R7
R4
R3
R1
R2
R6
Blue
Green
Yellow
Black
Gray
White
2 - 11
VR3
VR2
VR1
Hot shoe
$V_2 - V_1 = 373.1 \pm 2mV \rightarrow VR1$
V2: ASA25 T 1/500 F22
V1: ASA1600 T 1/1 F3.4

Fig. 37

Fig. 38



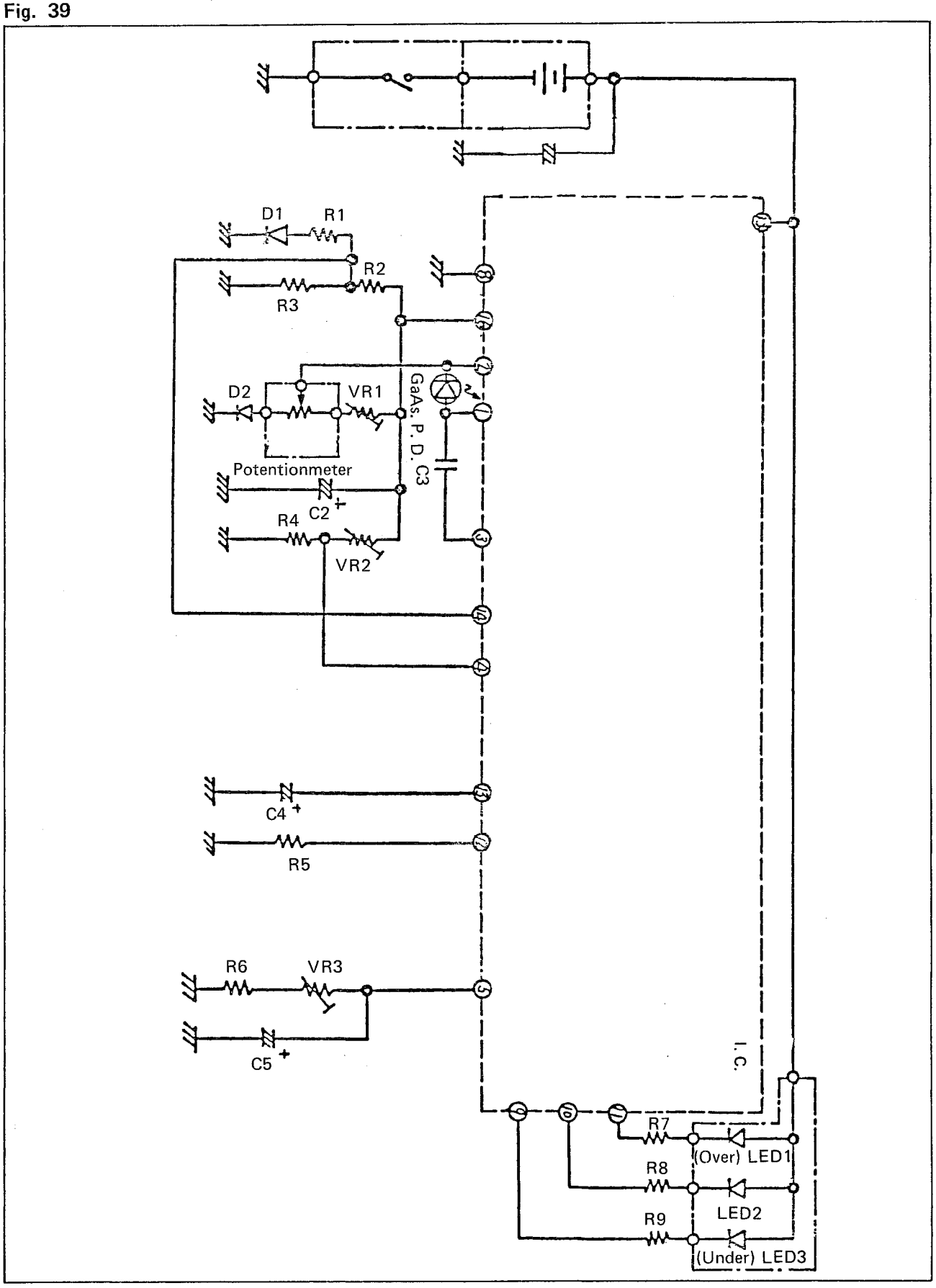
LED display value (Adjust VR2 at ASA 100)

LV	Light source	T	F	Rating
15	14390 rlx.	1/500	8	±1 EV
12	1800 rlx.	1/125	5.6	"
9	225 rlx.	1/15	5.6	"
6	28 rlx.	1/2	5.6	"

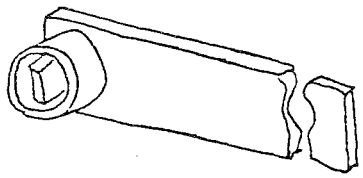
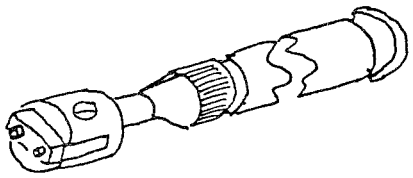
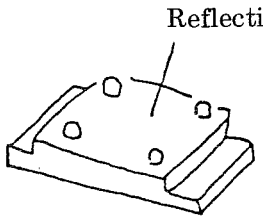
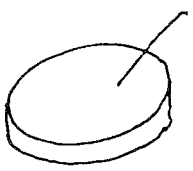
○ IC TA. 2F 7646F pin operations

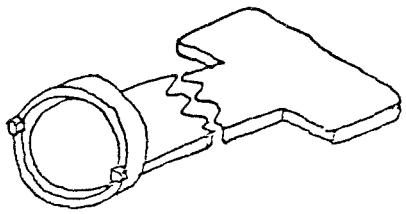
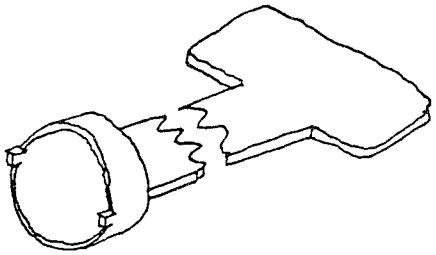
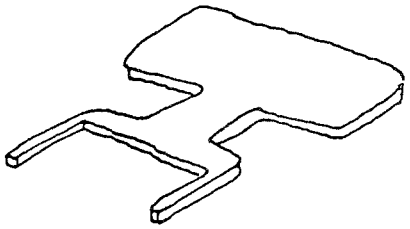
Pin No.	Name	Operation
1	Photocell (—) input	
2	S. F. T value input	
3	S. F. T. L output	About 18.2 mV/EV $\frac{V_2 - V_1}{20.5} = \frac{373.1}{20.5}$ = 18.2
4	S. F. T. L output adjust terminal	LED display value adjustment
5	LED lighting width adjust terminal	
6		
7		
8	GND	
9	LED terminal (Under)	ON at 0.5V or below, OFF at 1.5V or higher
10	LED terminal (Proper)	ON at 0.5V or below, OFF at 1.5V or higher
11	LED terminal (Over)	ON at 0.5V or below, OFF at 1.5V or higher
12	Battery check terminal	LED goes out when voltage is about 2.0V
13	Output stabilizing terminal	LED is unstable under OPEN state
14	Temperature guarantee circuit terminal	
15	IC poower supply (+)	Battery voltage
16	Reference voltage	1.25V

Fig. 39


D1
R1
R2
R3
D2
VR1
GaAs. P. D.
C3
Potentionmeter
C2
R4
VR2
C4
R5
R6
VR3
C5
I. C.
R7
(Over) LED1
R8
LED2
R9
(Under) LED3

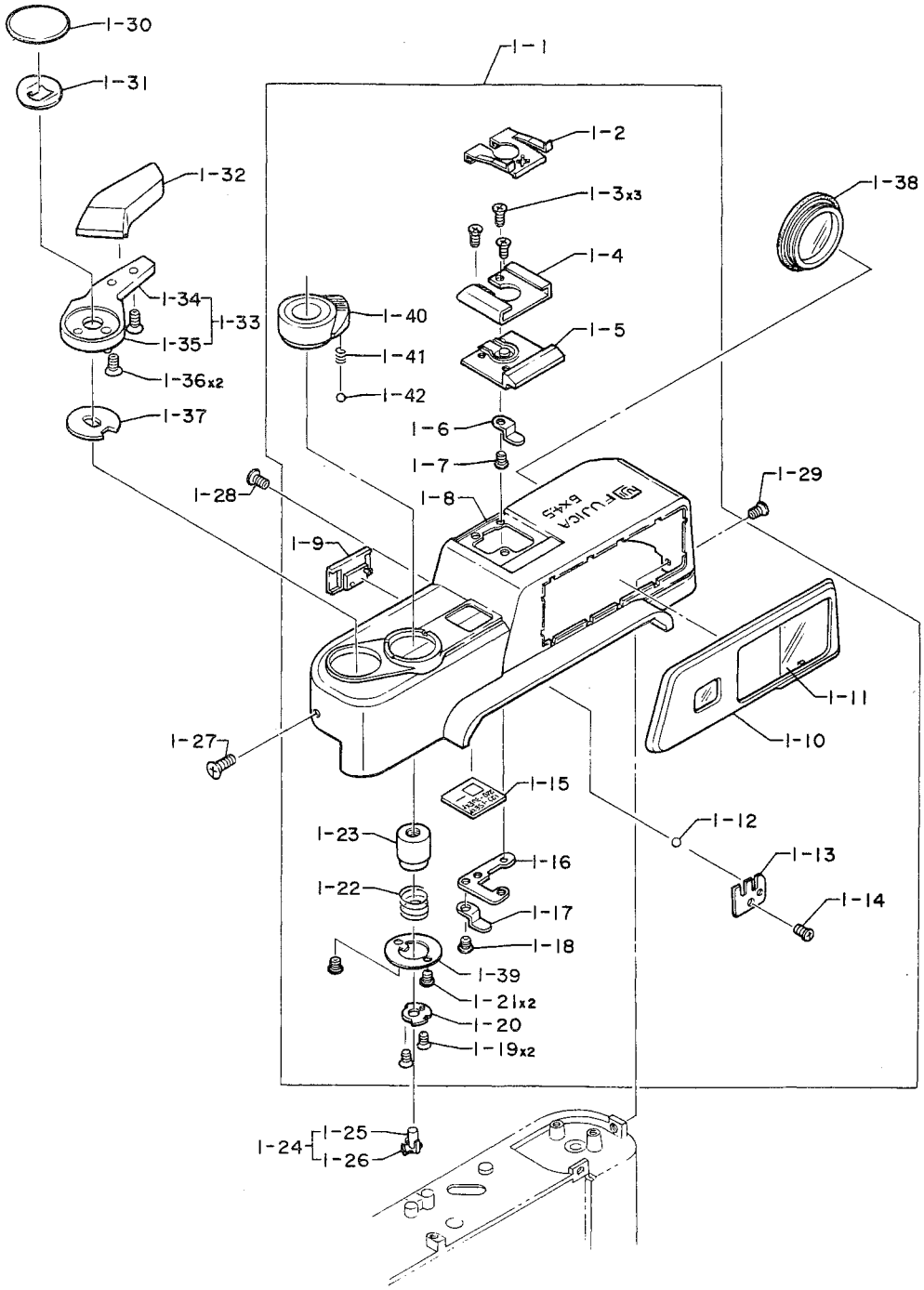
Ⅲ SPECIAL TOOL LIST

No.	Name	Sketch and Application
J11299	Screw driver	 Used to hold the set screw when tightening the set screw when adjusting spool friction. The subhective set screws are 6 - 76 and 6 - 70.
J11317	Pin face screw driver	 Used to install and remove the set screw (5 - 17).
J11286	Base plate	 Placed on the rail of the camera
J11303	Reflector	 Used when adjusting parallelism of the lens

No.	Name	Sketch and Application
J11293 - 01	Pin face spanner	 Used for tightening ring (4 - 56).
J11293 - 02	Pin face spanner	 Used for the rear lens (4 - 57).
J11293 - 03	Pin face spanner	 Used for the front lens (4 - 59).

Ⅳ PARTS LIST

Fig. 1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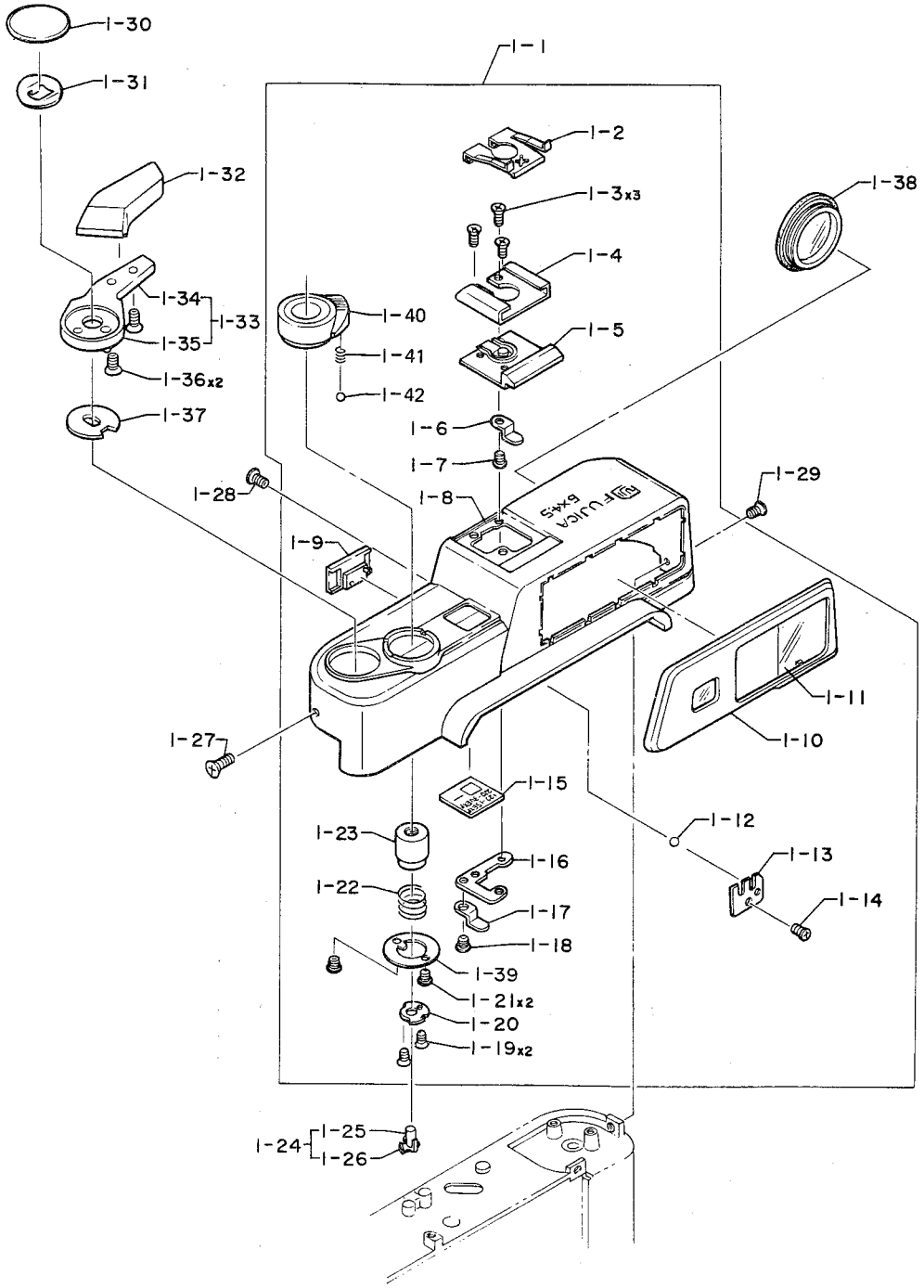
REF NO.	PART NO.	PART NAME	Q'TY	REMARKS
1 - 1	303A3286000	Top cover assembly	1	
1 - 2	11B1492470	Shoe cover	1	ST901BL
1 - 3	111M170401N	Set screw	3	
1 - 4	11B2252410	Shoe	1	STX - 1
1 - 5	115A3286010	Contact seat assembly	1	
1 - 6	109B35871	Contact	1	
1 - 7	110M140121N	Set screw	1	
1 - 9	16B3286143	Film selector knob	1	
1 - 10	84B3286111	Window frame	1	
1 - 11	6A3286090	Window glass	1	
1 - 12	200M20	Steel ball	1	
1 - 13	50B3286153	Leaf spring	1	
1 - 14	113M170201S	Set screw	1	
1 - 15	6B3286224	Exposure counter window	1	
1 - 16	85B3286210	Base plate	1	
1 - 17	109B35871	Contact	1	
1 - 18	110M140121N	Set screw	1	
1 - 19	111M140251S	Set screw	1	
1 - 20	85B3286253	Holder	1	
1 - 21	113M140201S	Set screw	2	
1 - 22	50B3286240	Spring	1	
1 - 23	16B3286233	Shutter release	1	
1 - 24	32A3280100	Release bar assembly	1	
1 - 27	53B3280360	Screw	1	
1 - 28	53B3280350	Screw	1	
1 - 29	53B3280350	Screw	1	
1 - 30	53B3280421	Set screw	1	
1 - 31	50B3280380	Leaf spring	1	
1 - 32	81B3280402	Cover plate	1	
1 - 33	47A3280050	Film advance lever assembly	1	
1 - 36	111M170503S	Set screw	2	
1 - 37	85B3280372	Lock plate	1	

Fig. 1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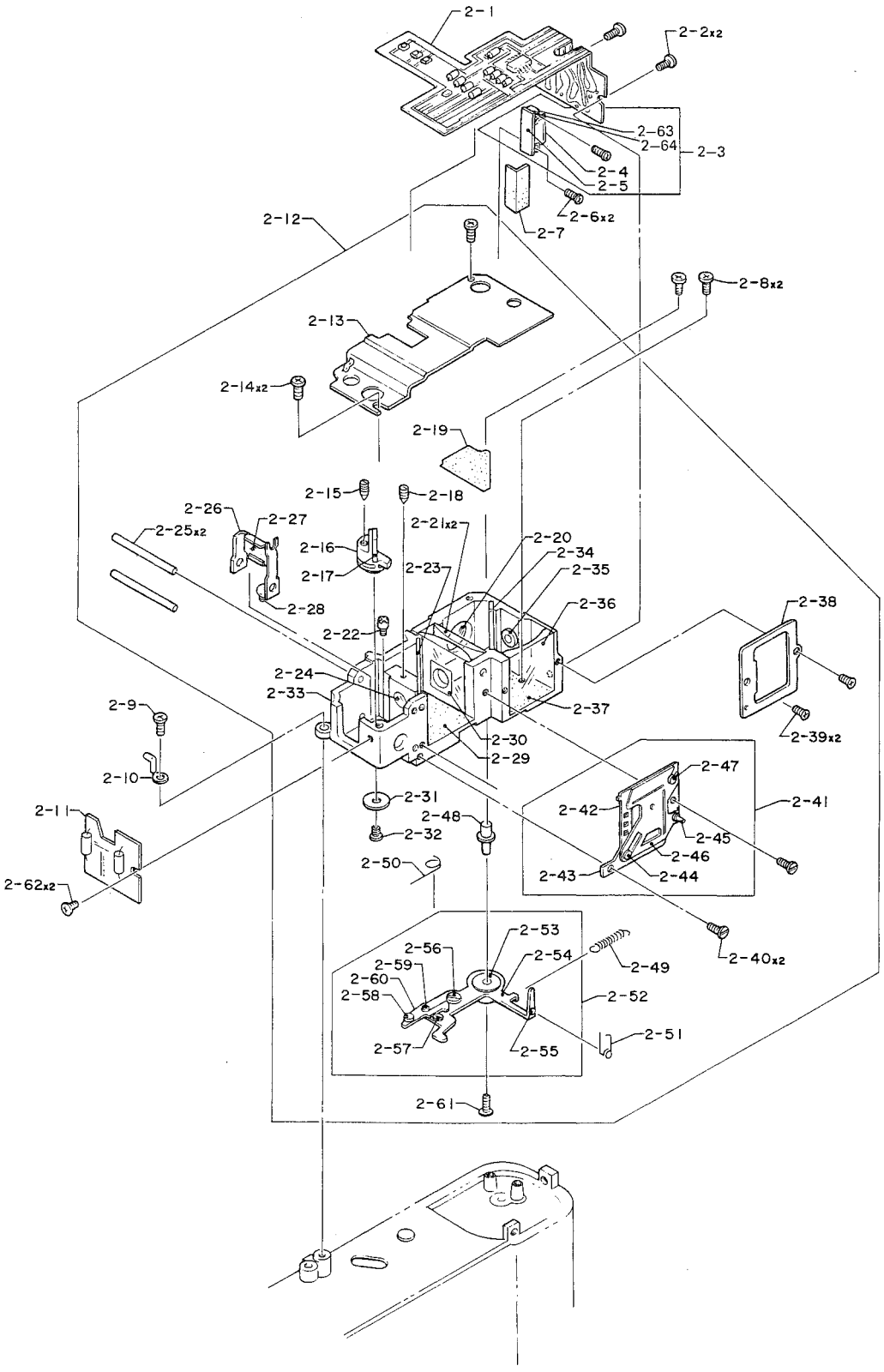
REF NO.	PART NO.	PART NAME	Q'TY	REMARKS
1 - 38	23A3280630	Eyepiece assembly	1	
1 - 39	85B3286190	Stopper	1	
1 - 40	16B3286180	Button seat	1	
1 - 41	50B3286200	Spring	1	
1 - 42	200M12	Steel ball	1	

Fig. 2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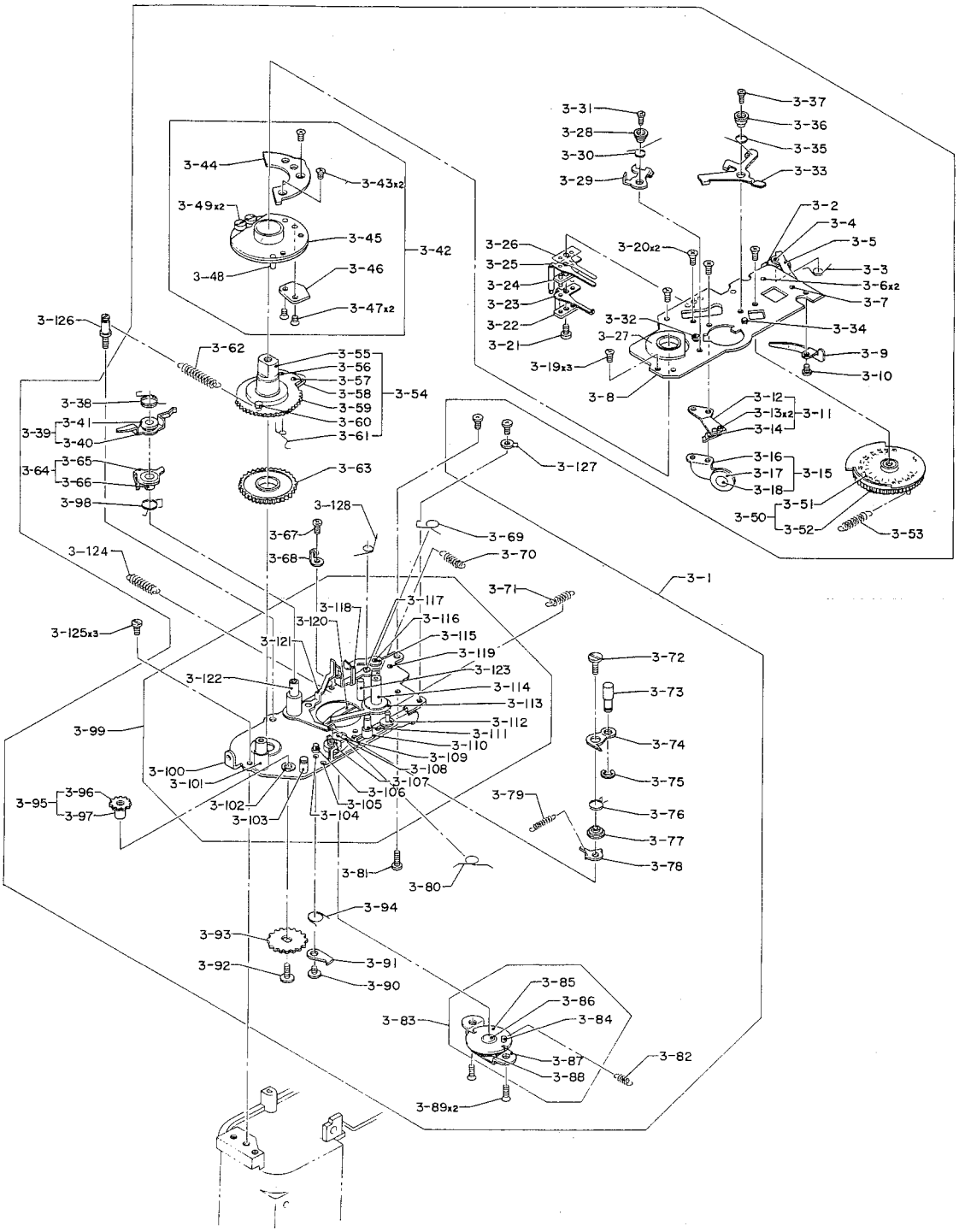
REF NO.	PART NO.	PART NAME	Q'TY	REMARKS
2- 1	110A3288810	Flexible PCB assembly	1	
2- 2	110M170301N	Screw	2	
2- 3	81A3287500	LED holder assembly	1	
2- 5	110A3288590	LED assembly (R)	1	
2- 6	110M140503S	Set screw	2	
2- 7	27B3287870	Light shielding paper	1	
2- 8	110M200551S	Screw	2	
2- 9	110M200551S	Screw	1	
2-10	109B72560	Staple	1	
2-11	110A3289100	PCB assembly	1	
2-12	99A51321A00	Range finder assembly	1	
2-13	11B3287640	Cover	1	
2-14	110M170251S	Screw	2	
2-15	53B32460	Adjust screw	1	
2-18	120M200503F	Screw	1	
2-19	27B3287790	Velveteen (I)	1	
2-29	27B3287800	Velveteen (II)	1	
2-31	55B2324850	Washer	1	
2-32	110M170251S	Screw	1	
2-37	27B3287810	Velveteen (III)	1	
2-39	111M140251S	Screw	2	
2-40	53B2193440	Screw	2	
2-41	29A3287510	Virefinder frame assembly	1	
2-49	50B1299093	Spring	1	
2-50	50B3287700	Spring	1	
2-51	50B3287830	Spring	1	
2-52	47A3287490	Linkage assembly	1	
2-56	53B32770	Screw	1	
2-61	53B32580	Screw	1	
2-62	110M140251S	Screw	2	

Fig. 3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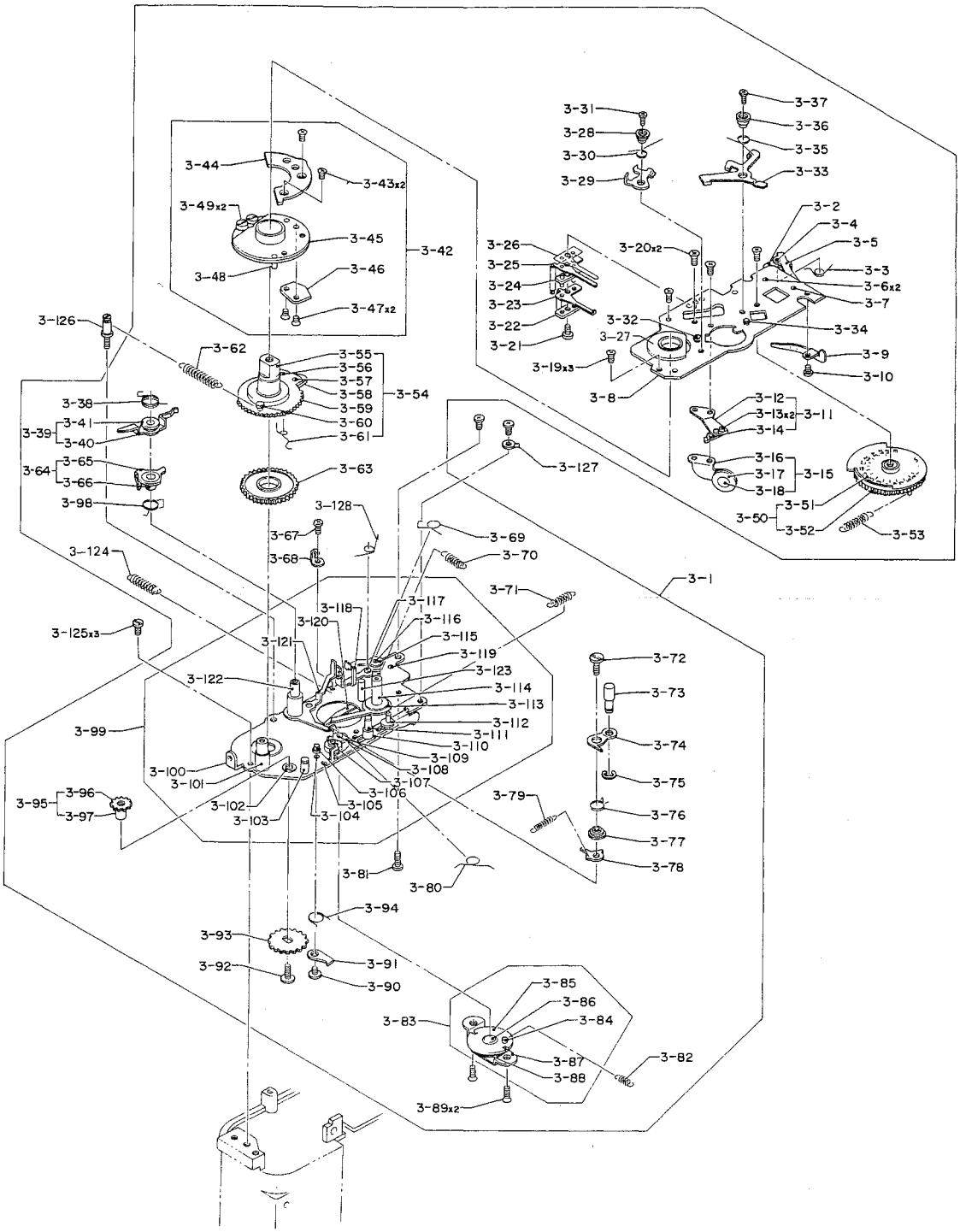
REF NO.	PART NO.	PART NAME	Q'TY	REMARKS
3 - 1	310A3284950	Film advance mechanism assembly	1	
3 - 3	50B3284080	Spring	1	
3 - 9	50B3284070	Leaf spring	1	
3 - 10	110M140121N	Set screw	1	
3 - 11	85A3284990	Release plate assembly	1	
3 - 15	85A3285000	Pulley base assembly	1	
3 - 19	111M170401S	Set screw	3	
3 - 20	111M170201S	Set screw	2	
3 - 21	110M140303S	Set screw	1	
3 - 22	115B1278230	Insulation plate	1	
3 - 23	109B3284730	Contact	1	
3 - 24	115B127030	Insulator	1	
3 - 25	109B3284720	Contact	1	
3 - 26	109B3284820	Insulator	1	
3 - 28	42B3284910	Collar	1	
3 - 29	47B3284900	Lever	1	
3 - 30	50B3284921	Spring	1	
3 - 31	111M140251S	Set screw	1	
3 - 33	47B3286480	Lever	1	
3 - 34	17B29290	Shaft	1	
3 - 35	50B3284921	Spring	1	
3 - 36	42B3286500	Collar	1	
3 - 37	111M140251S	Set screw	1	
3 - 38	50B3286490	Spring	1	
3 - 39	47A3285140	Lever assembly	1	
3 - 42	36A3285130	Large pulley assembly	1	
3 - 43	111M170201S	Set screw	2	
3 - 44	85B3284560	Large cam	1	
3 - 46	85B3284550	Cam	1	
3 - 47	111M140201S	Set screw	2	
3 - 50	34A3285050	Counter dial assembly	1	
3 - 53	50B3284300	Spring	1	

Fig. 3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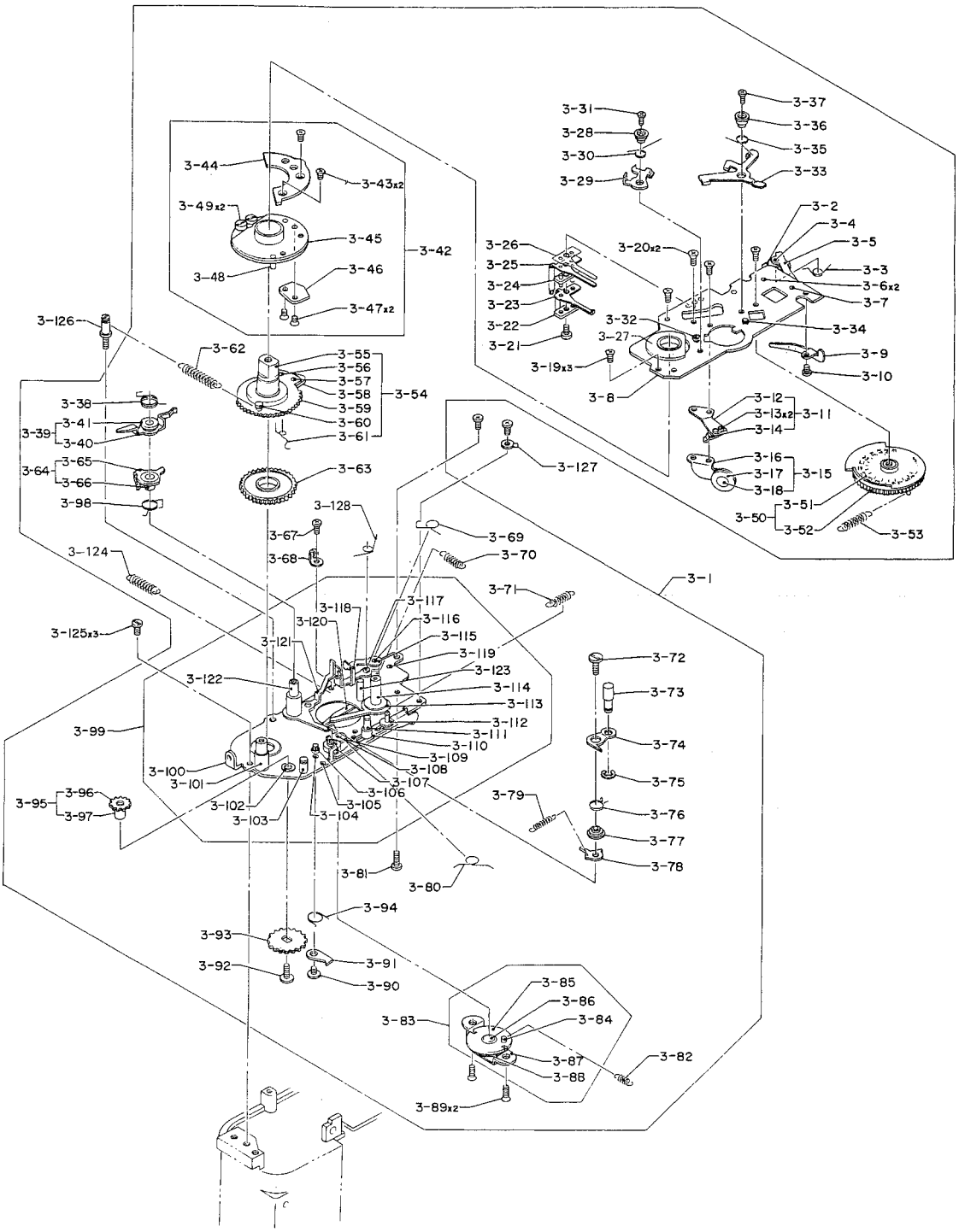
REF NO.	PART NO.	PART NAME	Q'TY	REMARKS
3 - 54	34B3285080	Ratchet wheel assembly	1	
3 - 61	50B3284510	Spring	1	
3 - 62	50B3284661	Spring	1	
3 - 63	34B3284450	Gear	1	
3 - 64	47A3285090	Release lever assembly	1	
3 - 67	110M170453S	Set screw	1	
3 - 68	111B72560	Staple	1	
3 - 69	50B3284270	Spring	1	
3 - 70	50B93500	Spring	1	
3 - 71	50B3281491	Spring	1	
3 - 72	53B3284380	Set screw	1	
3 - 73	17B3284790	Shaft	1	
3 - 74	47B3284770	Lever	1	
3 - 75	191M012T	E - clip	1	
3 - 76	50B3284870	Spring	1	
3 - 77	42B3284780	Collar	1	
3 - 78	85B3284360	Swing lever	1	
3 - 79	17B3284940	Spring	1	
3 - 80	50B3284430	Spring	1	
3 - 81	110M140453S	Set screw	1	
3 - 82	50B3284191	Spring	1	
3 - 83	41A3285030	Plate assembly	1	
3 - 89	110M170353S	Set screw	2	
3 - 90	53B3284810	Set screw	1	
3 - 91	45B1061	Claw	1	
3 - 92	53B29190	Set screw	1	
3 - 93	34B3284120	Gear	1	
3 - 94	50B3284400	Spring	1	
3 - 95	34A3285110	Gear shaft assembly	1	
3 - 98	50B3284672	Spring	1	
3 - 124	50B2458151	Spring	1	
3 - 125	110M200303S	Set screw	3	

Fig. 3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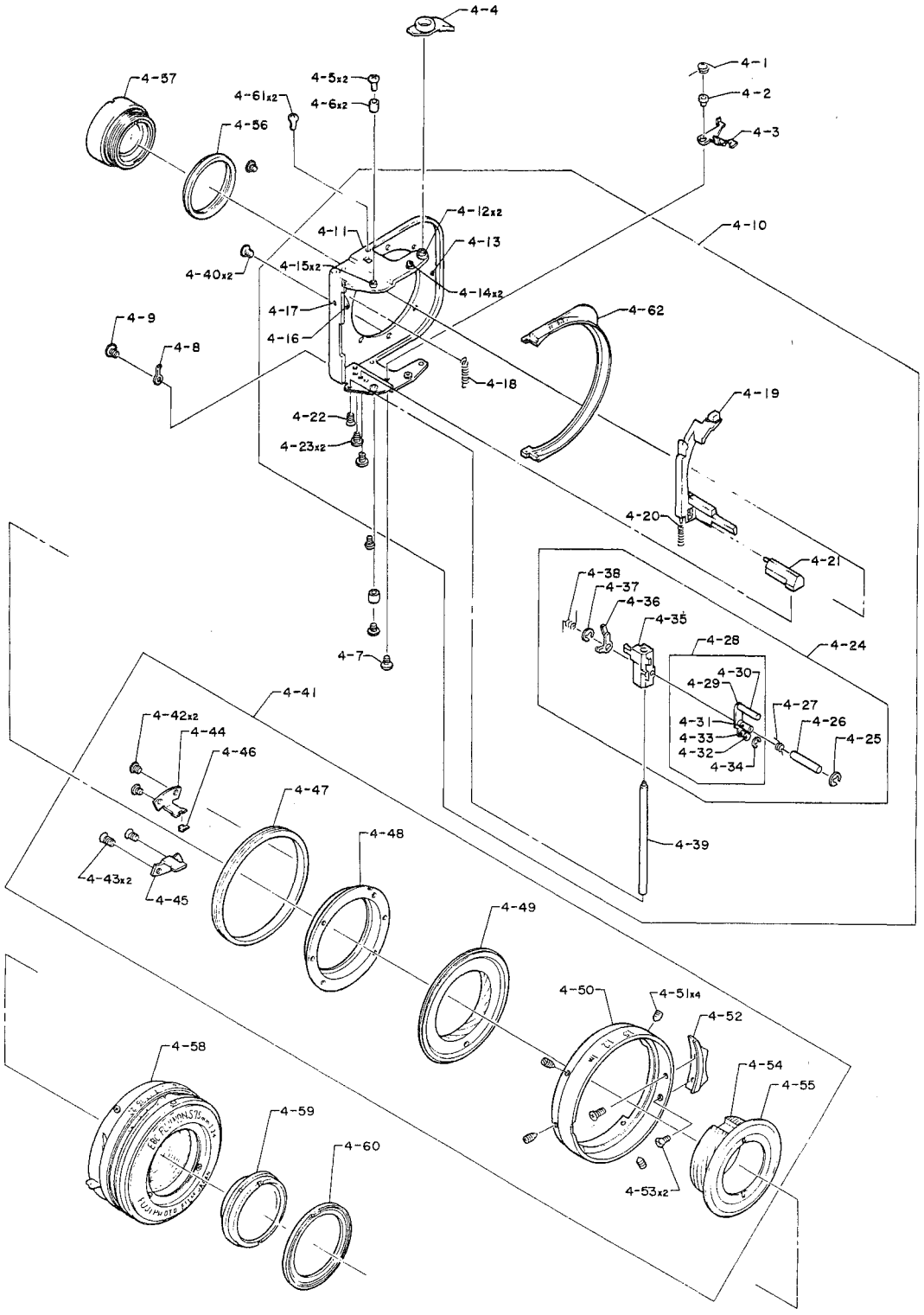
REF NO.	PART NO.	PART NAME	Q'TY	REMARKS
3 - 126	53B3281730	Screw	1	
3 - 127	111B72560	Staple	1	
3 - 128	50B3284330	Spring	1	

Fig. 4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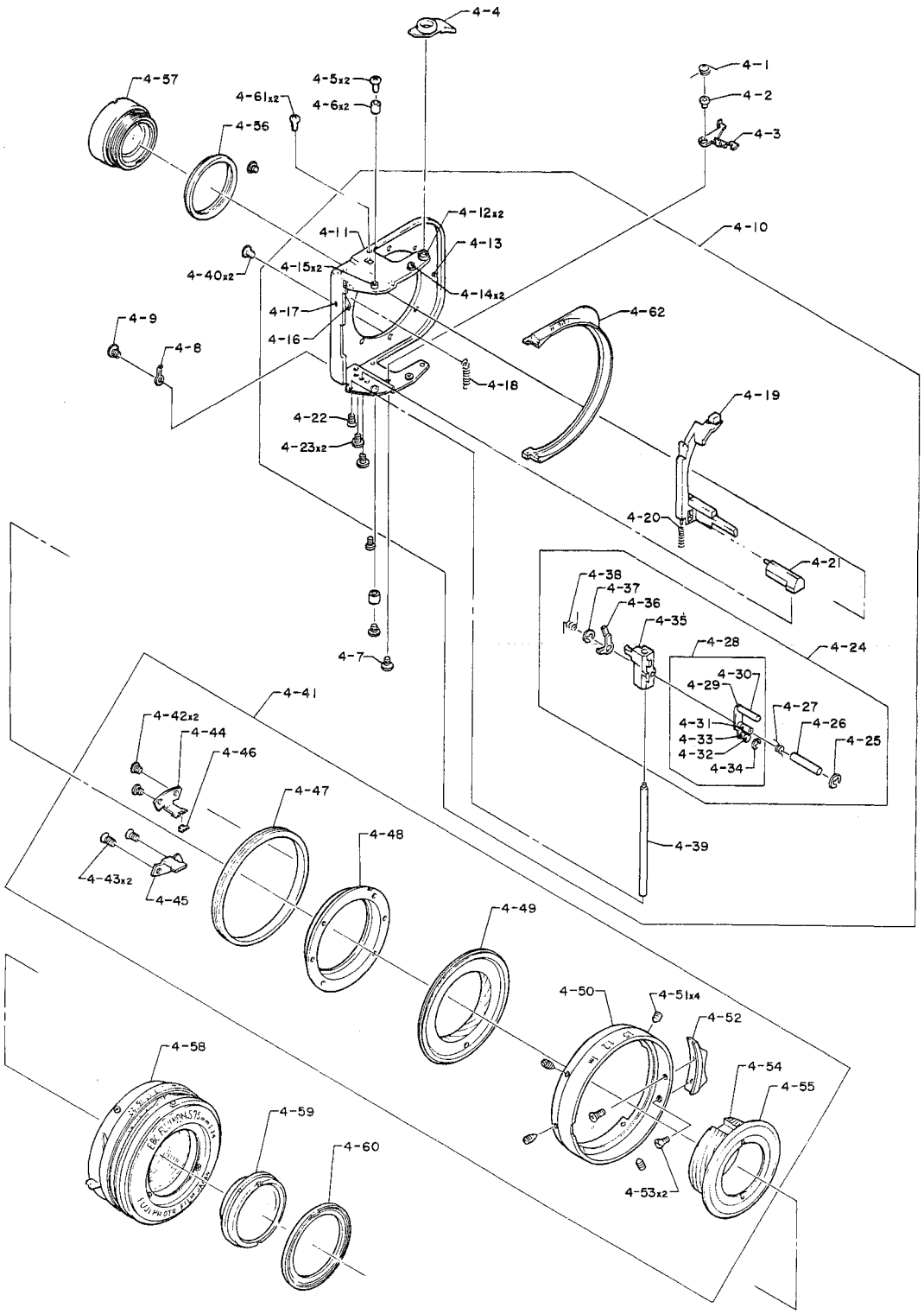
REF NO.	PART NO.	PART NAME	Q'TY	REMARKS
4 - 1	50B3285540	Spring	1	
4 - 2	32B3285530	Shaft	1	
4 - 3	47B3285520	Lever	1	
4 - 4	11B3280700	Index cover	1	
4 - 5	110M140303S	Set screw	2	
4 - 6	23B3285510	Collar D = 3ϕ	0 ~ 2	
	23B3285550	Collar D = 3.4ϕ	0 ~ 2	
	23B3285560	Collar D = 2.6ϕ	0 ~ 2	
	23B3282780	Collar D = 2.8ϕ	0 ~ 2	
	23B3282790	Collar D = 3.2ϕ	0 ~ 2	
	23B3282800	Collar D = 3.6ϕ	0 ~ 2	
4 - 7	110M140351S	Set screw	1	
4 - 8	85B3282821	Staple	1	
4 - 9	110M140161S	Set screw	1	
4 - 10	12A3282030	Housing assembly	1	
4 - 18	50B3285330	Spring	1	
4 - 19	47B3285197	Lever	1	
4 - 20	50B3285321	Spring	1	
4 - 21	81B3285200	Rod	1	
4 - 22	111M140301S	Set screw	1	
4 - 23	113M170401S	Set screw	2	
4 - 24	82A3282040	Slider assembly	1	
4 - 25	191M012T	E - clip	1	
4 - 26	32B3285280	Shaft	1	
4 - 27	50B3285313	Spring	1	
4 - 28	47A3282100	Lever assembly	1	
4 - 34	191M012T	E - clip	1	
4 - 35	82B3285270	Slider	1	
4 - 36	47B3285260	Lever	1	
4 - 37	191M012T	E - clip	1	
4 - 38	50B3285300	Spring	1	
4 - 39	32B3285290	Shaft	1	

Fig. 4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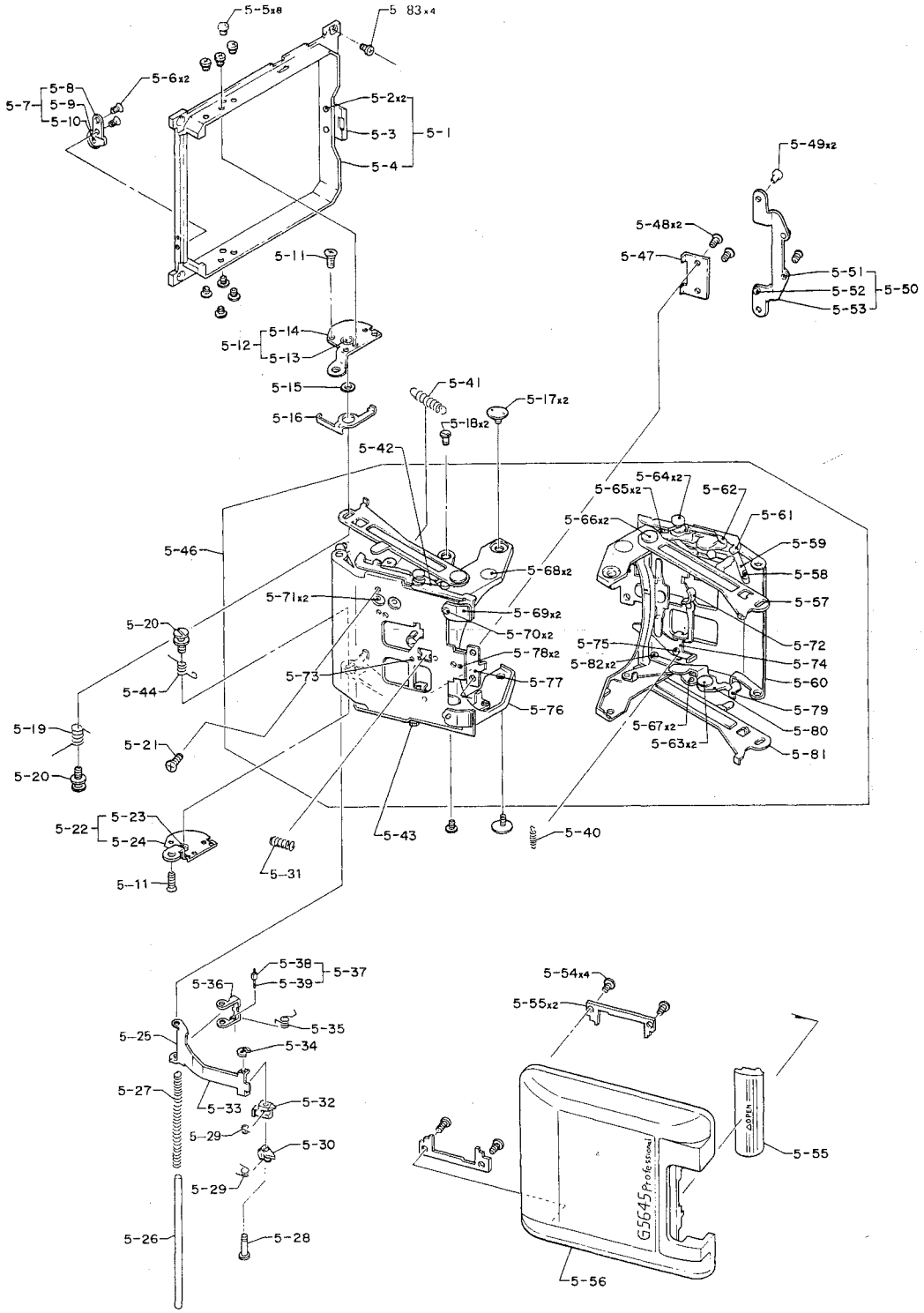
REF NO.	PART NO.	PART NAME	Q'TY	REMARKS
4 - 40	111M140221S	Set screw	2	
4 - 41	21A3283050	Helicoid assembly	1	
4 - 42	110M140253T	Set screw	2	
4 - 43	111M140253T	Set screw	2	
4 - 44	30B3282970	Helicoid guide	1	
4 - 45	30B3282980	Helicoid guide	1	
4 - 46	27B3289470	Light shielding material	1	
4 - 50	23B3283000	Focusing ring	1	
4 - 51	120M170301S	Set screw	4	
4 - 52	16B3283090	Knob	1	
4 - 53	114A170301S	Set screw	2	
4 - 56	23B3283030	Hold ring	1	
4 - 57	21A3289390	Rear lens assembly	1	
4 - 58	38A3389460	Shutter assembly	1	
4 - 59	21A3289380	Front lens assembly	1	
4 - 60	23B3280430	Name ring	1	
4 - 61	110M140201S	Set screw	2	
4 - 62	11B3280470	Mold	1	

Fig. 5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G645Prototype
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REF NO.	PART NO.	PART NAME	Q'TY	REMARKS
5 - 1	46A3282020	Frame assembly	1	
5 - 5	110M170301S	Set screw	8	
5 - 6	111M170351S	Set screw	1	
5 - 7	85A3282110	Pulley base assembly	1	
5 - 11	111M170701S	Set screw	1	
5 - 12	48A3282080	Upper shaft holder assembly	1	
5 - 15	55B3285340	Washer	0 ~ 1	
5 - 16	50B3283910	Leaf spring	1	
5 - 17	53B3283810	Screw	2	
5 - 18	53B3283800	Set screw	2	
5 - 19	50B3283890	Spring	1	
5 - 20	53B3283751	Set screw	2	
5 - 21	110M140351S	Set screw	1	
5 - 22	48A3282090	Lower shaft holder assembly	1	
5 - 25	111M170701S	Set screw	1	
5 - 26	32B3282290	Shaft	1	
5 - 27	50B3282682	Main spring	1	
5 - 28	32B3283961	Shaft	1	
5 - 29	50B3283991	Spring	1	
5 - 30	82B3282732	Claw	1	
5 - 31	50B3283351	Spring	1	
5 - 32	82B3282741	Claw	1	
5 - 33	47B3283857	Set lever	1	
5 - 34	191M012T	E - clip	1	
5 - 35	50B3282410	Spring	1	
5 - 36	85B3282330	Wire lever	1	
5 - 37	56A3280090	Wire assembly	1	
5 - 40	50B3282770	Spring	1	
5 - 41	50B3283930	Spring	1	
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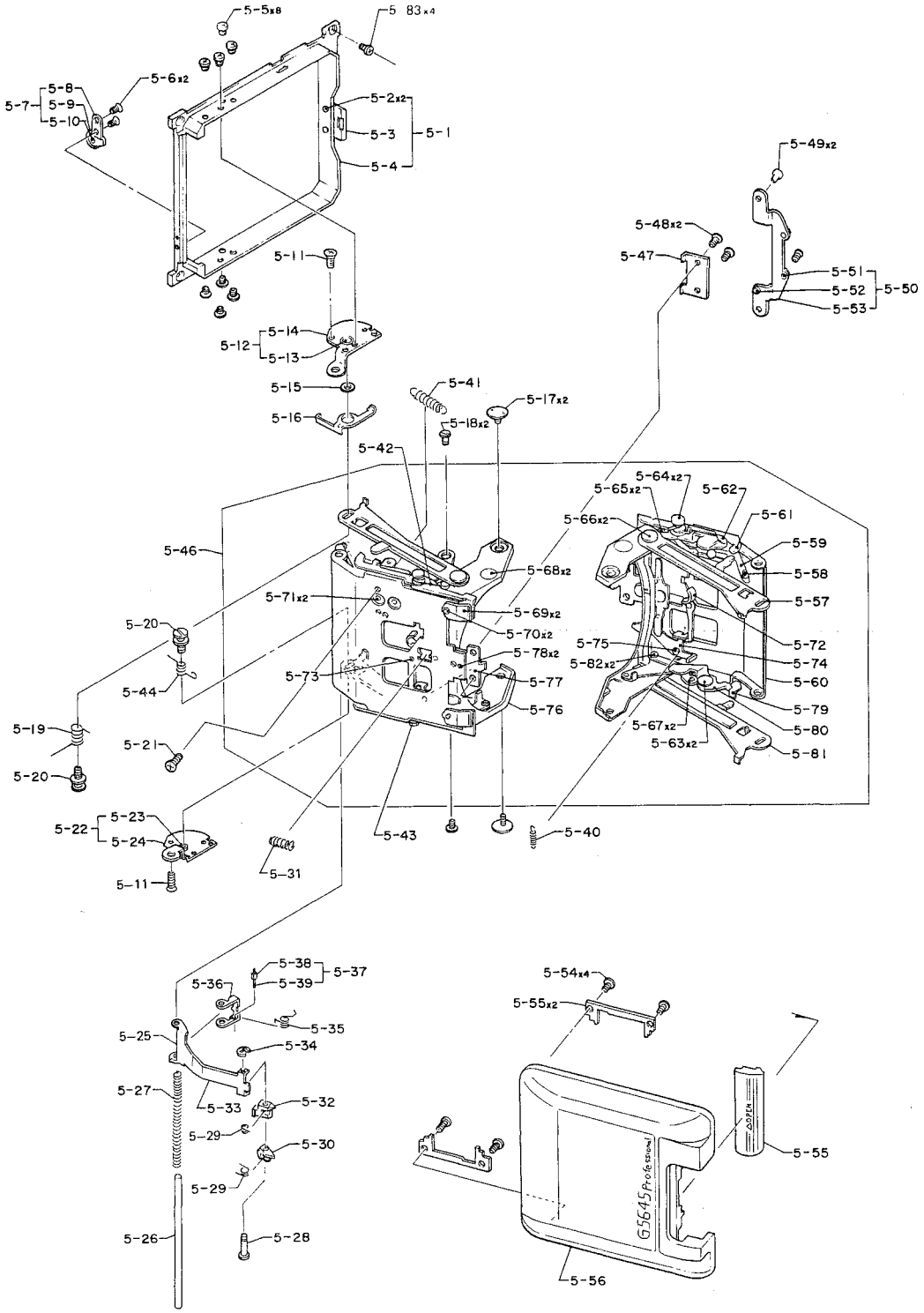
5 - 44	50B3283900	Spring	1	

Fig. 5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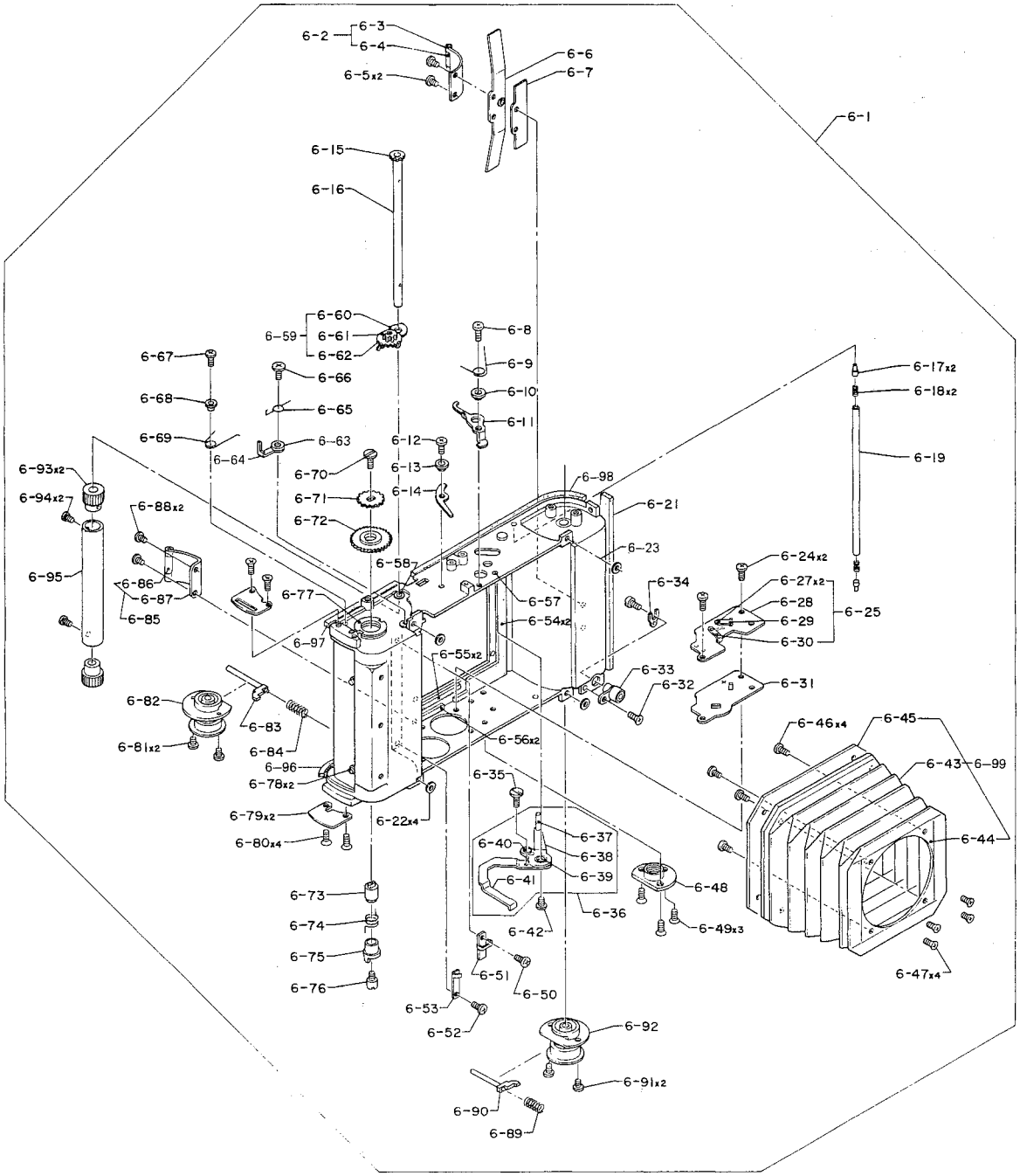
GS645 Professional
OPEN

REF NO.	PART NO.	PART NAME	Q'TY	REMARKS
5 - 45	85B3280510	Holder	2	
5 - 46	46A3282014	Front cover mechanism assembly	1	
5 - 47	85B3280490	Holder	1	
5 - 48	113M170251S	Set screw	1	
5 - 49	110M170223S	Set screw	1	
5 - 50	47A3282120	Push lever	1	
5 - 54	113M170401S	Set screw	1	
5 - 55	16B3285972	Knob	1	
5 - 69	50B3285480	Leaf spring	2	
5 - 70	110M140201S	Set screw	2	
5 - 83	110M230403S	Set screw	4	

Fig. 6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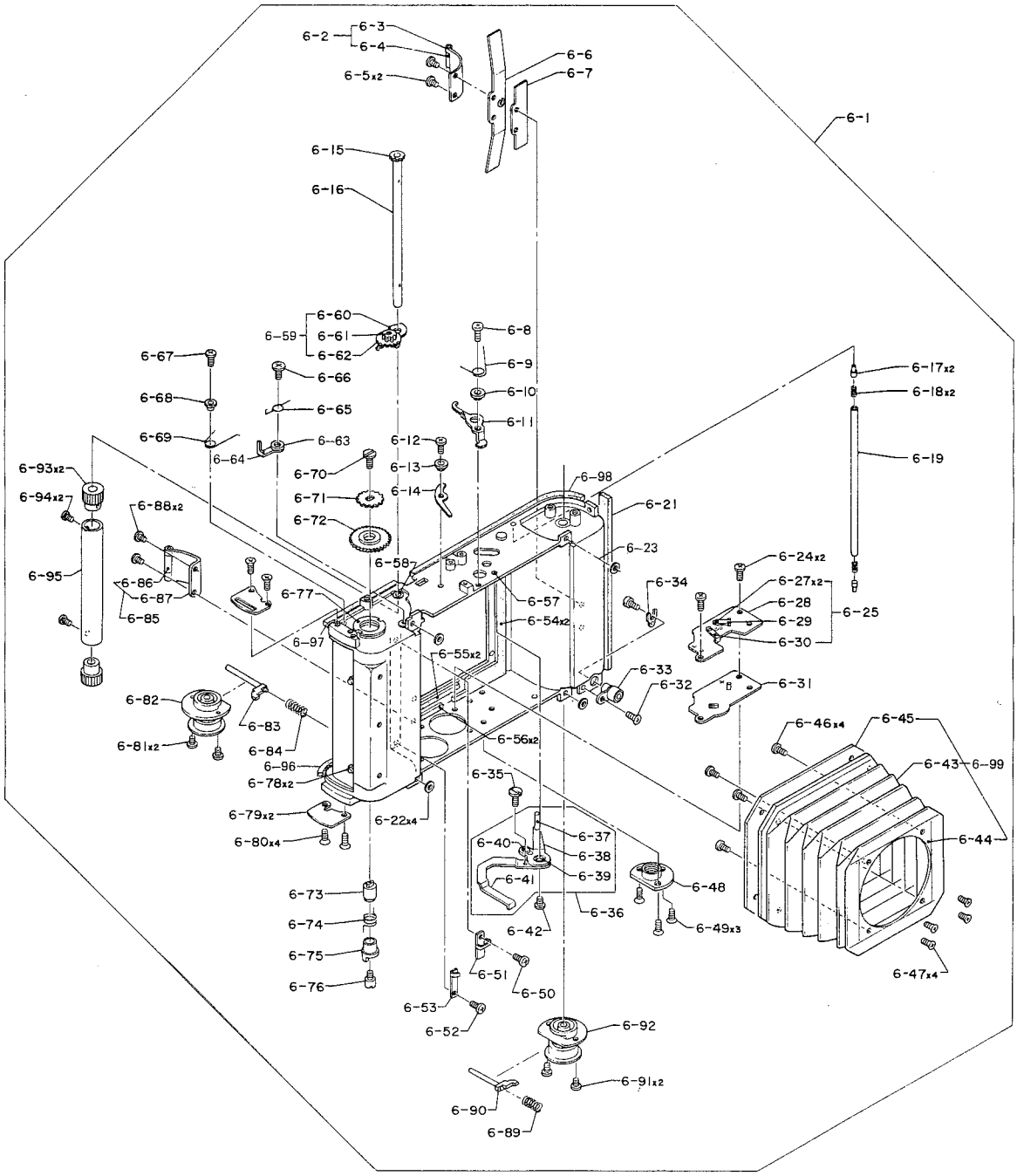
REF NO.	PART NO.	PART NAME	Q'TY	REMARKS
6 - 1	301A3281000	Camera body assembly	1	
6 - 2	50A3281090	Leaf spring assembly	1	
6 - 5	110M140251N	Set screw	2	
6 - 6	50B486960	Leaf spring	1	
6 - 7	55B3281930	Adjust plate	1	
6 - 8	53B3281770	Screw	1	
6 - 9	50B3281722	Spring	1	
6 - 10	42B3281701	Collar	1	
6 - 11	47B3281683	Lever	1	
6 - 12	110M170301B	Set screw	1	
6 - 13	42B3281701	Collar	1	
6 - 14	47B3281692	Lever	1	
6 - 15	34B3281390	Gear	1	
6 - 16	32B3281380	Shaft	1	
6 - 17	17B30161	Pin	2	
6 - 18	50B30170	Spring	2	
6 - 19	30B3281360	Roller	1	
6 - 21	27B3281851	Moquette	1	
6 - 22	55B3285350	Washer	0 ~ 4	
6 - 24	110M170251S	Set screw	2	
6 - 25	110A3289010	Battery PCB assembly	1	
6 - 31	115B3280550	Insulation plate	1	
6 - 32	111M170301N	Set screw	1	
6 - 33	112A3281050	Synchro - socket assembly	1	
6 - 34	108B563570	Lug	1	
6 - 35	53B32770	Screw	1	
6 - 36	47A3281010	Linkage assembly	1	
6 - 42	53B32770	Screw	1	
6 - 46	111M140301S	Set screw	4	
6 - 47	111M170221S	Set screw	4	
6 - 48	53B93823	Tripod socket	1	
6 - 49	111M200503S	Set screw	3	

Fig. 6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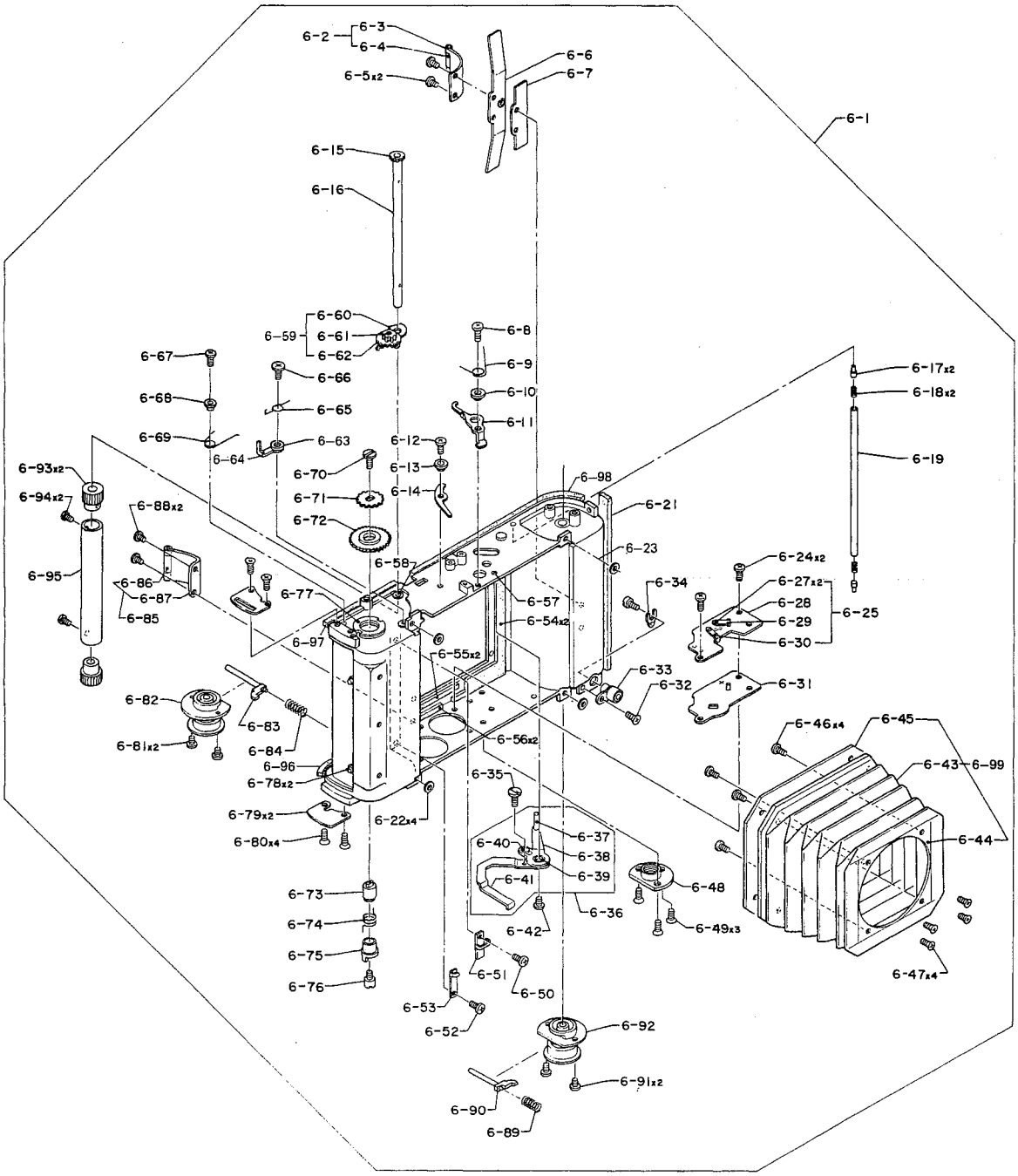
REF NO.	PART NO.	PART NAME	Q'TY	REMARKS
6 - 50	110M170201S	Set screw	1	
6 - 51	85B3281780	Cord holder	1	
6 - 52	110M170201S	Set screw	1	
6 - 53	85B3281780	Cord holder	1	
6 - 54	27B3281852	Moquette	2	
6 - 55	27B3281870	Moquette	2	
6 - 56	27B3281880	Moquette	2	
6 - 59	34A3281030	Idle gear assembly	1	
6 - 63	42B3281660	Collar	1	
6 - 64	47B3281670	Lever	1	
6 - 65	50B3281450	Spring	1	
6 - 66	50B3281760	Set screw	1	
6 - 67	110M170353S	Set screw	1	
6 - 68	42B3281840	Collar	1	
6 - 69	50B3281830	Spring	1	
6 - 70	53B3281350	Screw	1	
6 - 71	34B3284120	Gear	1	
6 - 72	34B3281321	Ratchet wheel	1	
6 - 73	32B3281310	Shaft	1	
6 - 74	50B3281330	Spring	1	
6 - 75	32B3281301	Spool shaft	1	
6 - 76	53B3281340	Screw	1	
6 - 77	42B3281290	Shaft holder	1	
6 - 79	41B3281231	Strap eyelet	2	
6 - 80	111M200503M	Set screw	4	
6 - 81	110M200351S	Set screw	2	
6 - 82	23A3281080	Guide ring assembly	1	
6 - 83	82B3281150	Release bar	1	
6 - 84	50B3281180	Spring	1	
6 - 85	50A3281100	Leaf spring assembly	1	
6 - 88	110M140251N	Set screw	2	
6 - 89	50B3281180	Spring	1	

Fig. 6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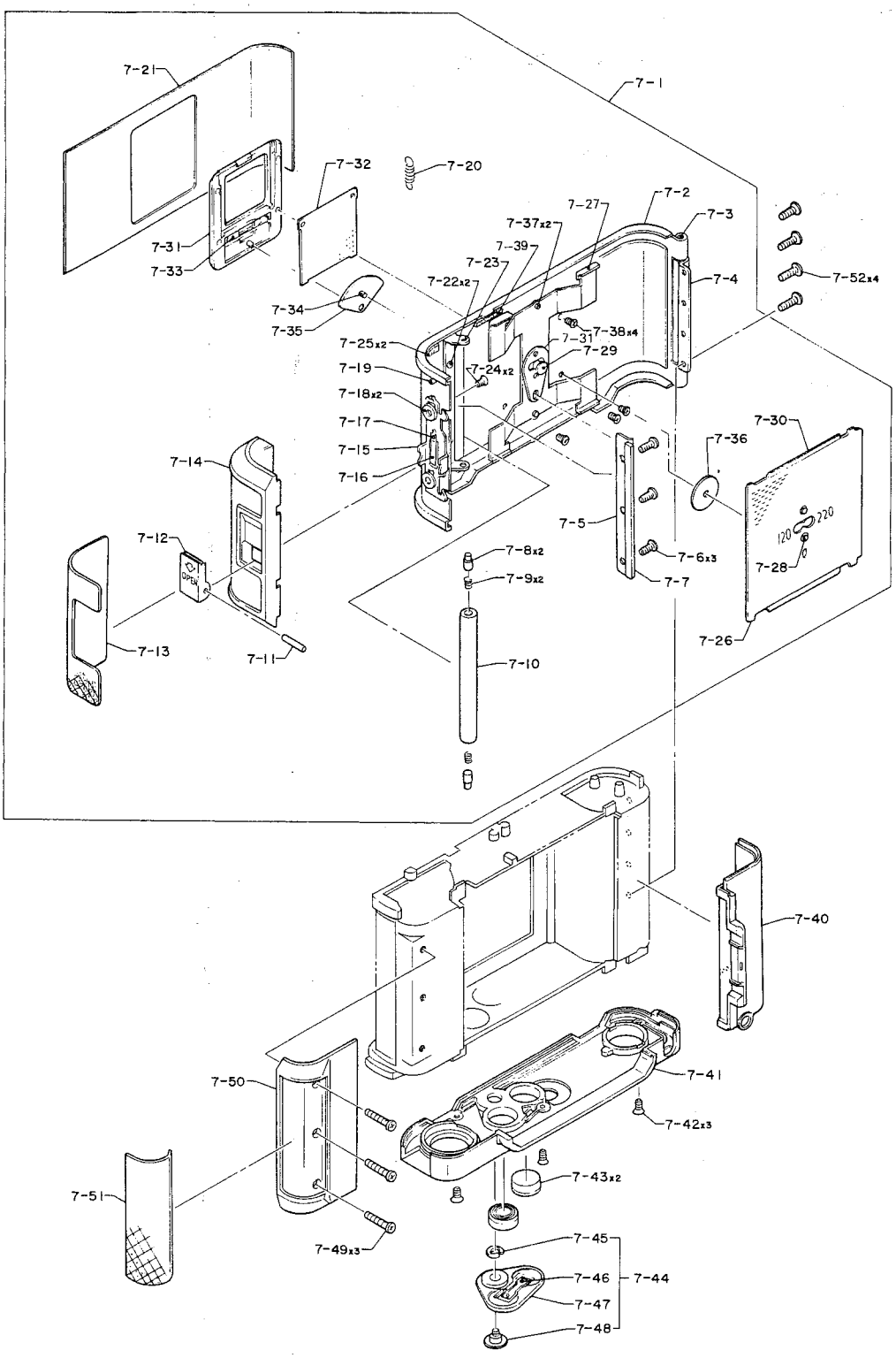
REF NO.	PART NO.	PART NAME	Q'TY	REMARKS
6 - 90	82B3281160	Release bar	1	
6 - 91	110M200351S	Set screw	2	
6 - 92	23A3281080	Guide ring assembly	1	
6 - 93	36B3281400	Counter roller	2	
6 - 94	111M140401S	Set screw	2	
6 - 95	36B3281410	Counter drum	1	
6 - 96	27B3281810	Moquette	1	
6 - 97	27B3281820	Moquette	1	
6 - 98	27B3281800	Moquette	1	
6 - 99	37A3281070	Bellows assembly	1	

Fig. 7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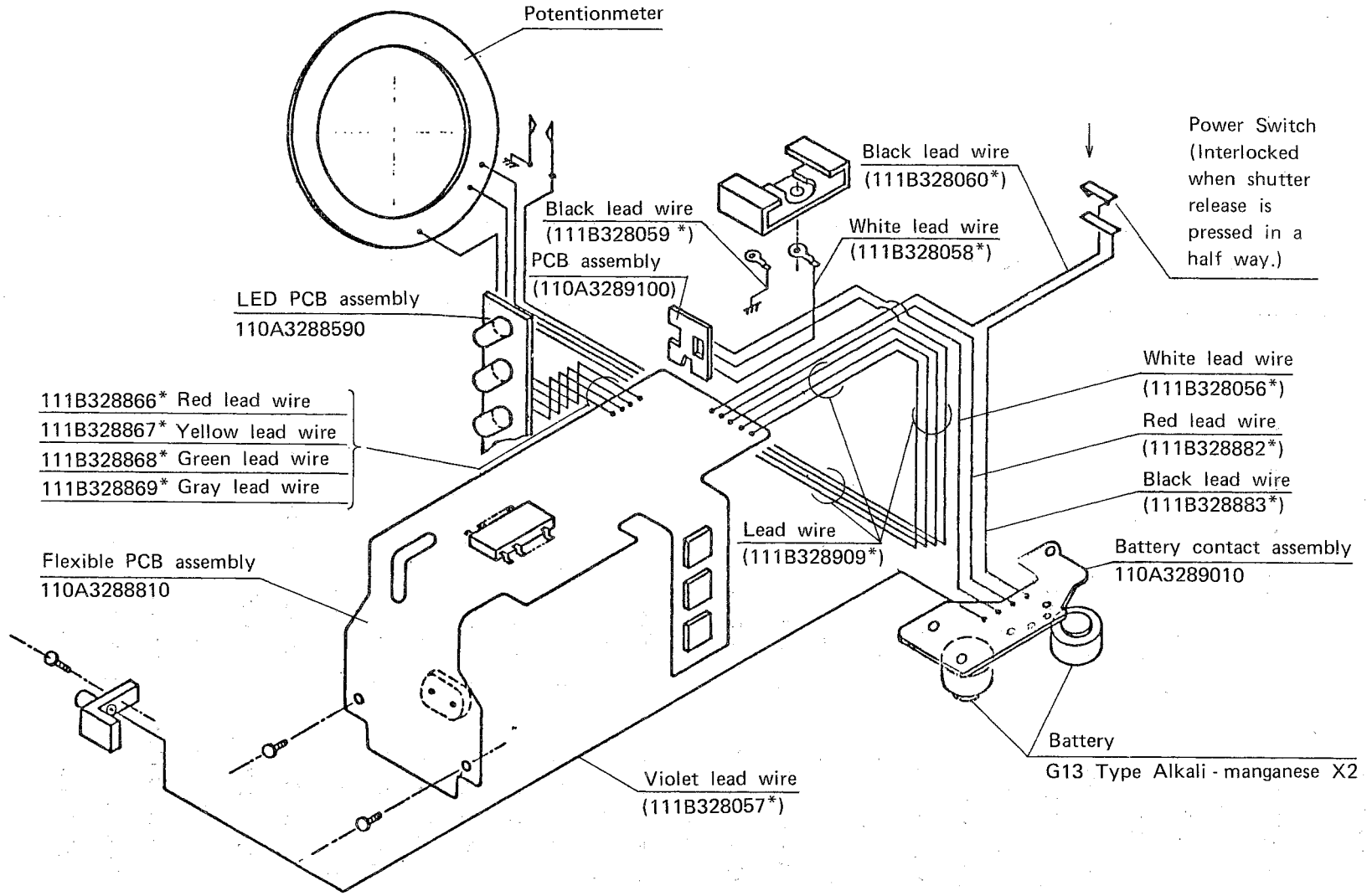
REF NO.	PART NO.	PART NAME	Q'TY	REMARKS
7 - 1	302A3287000	Film chamber door assembly	1	
7 - 3	32B32031	Hinge shaft	1	
7 - 4	19B32020	Hinge	1	
7 - 5	27B3287120	Light shielding plate	1	
7 - 6	113M200501S	Set screw	3	
7 - 7	27B32000	Moquette	1	
7 - 8	17B30160	Shaft	2	
7 - 9	50B30170	Spring	2	
7 - 10	37B492633	Roller	1	
7 - 11	32B3287340	Shaft	1	
7 - 12	16B3287320	Open - close button	1	
7 - 13	59B3287371	Leather	1	
7 - 14	11B3281242	Cover frame	1	
7 - 20	50B3287391	Spring	1	
7 - 21	59B3287270	Leather	1	
7 - 24	114M200501S	Set screw	2	
7 - 25	27B3287280	Moquette	2	
7 - 39	27B3287290	Moquette	1	
7 - 40	11B3281620	Terminal cover	1	
7 - 41	11B3280300	Bottom cover	1	
7 - 42	53B2189030	Set screw	3	
7 - 43	104K457690	Battery	2	
7 - 44	16A3280070	Battery cap assembly	1	
7 - 45	191M020T	E - clip	1	
7 - 48	53B3280320	Set screw	1	
7 - 49	110M230803S	Set screw	3	
7 - 50	11B3285980	Cover frame	1	
7 - 51	59B3280620	Leather	1	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Power Switch
(Interlocked
when shutter
release is
pressed in a
half way.)
Black lead wire
(111B328059 *)
White lead wire
(111B328058*)
PCB assembly
(110A3289100)
LED PCB assembly
110A3288590
White lead wire
(111B328056*)
111B328866* Red lead wire
111B328867* Yellow lead wire
111B328868* Green lead wire
111B328869* Gray lead wire
Red lead wire
(111B328882*)
Black lead wire
(111B328883*)
Lead wire
(111B328909*)
Flexible PCB assembly
110A3288810
Battery contact assembly
110A3289010
Battery
G13 Type Alkali - manganese X2
Violet lead wire
(111B328057*)

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